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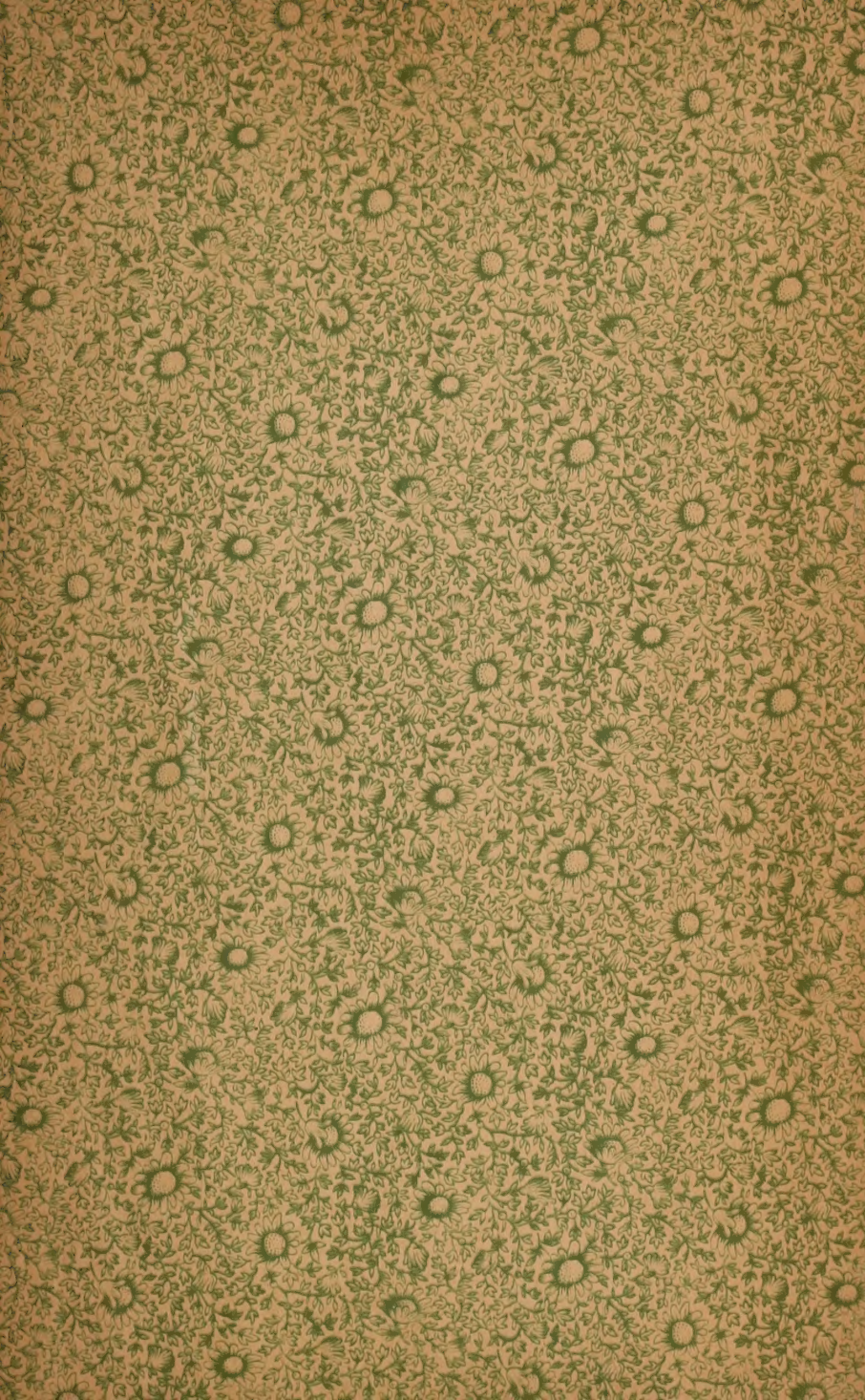
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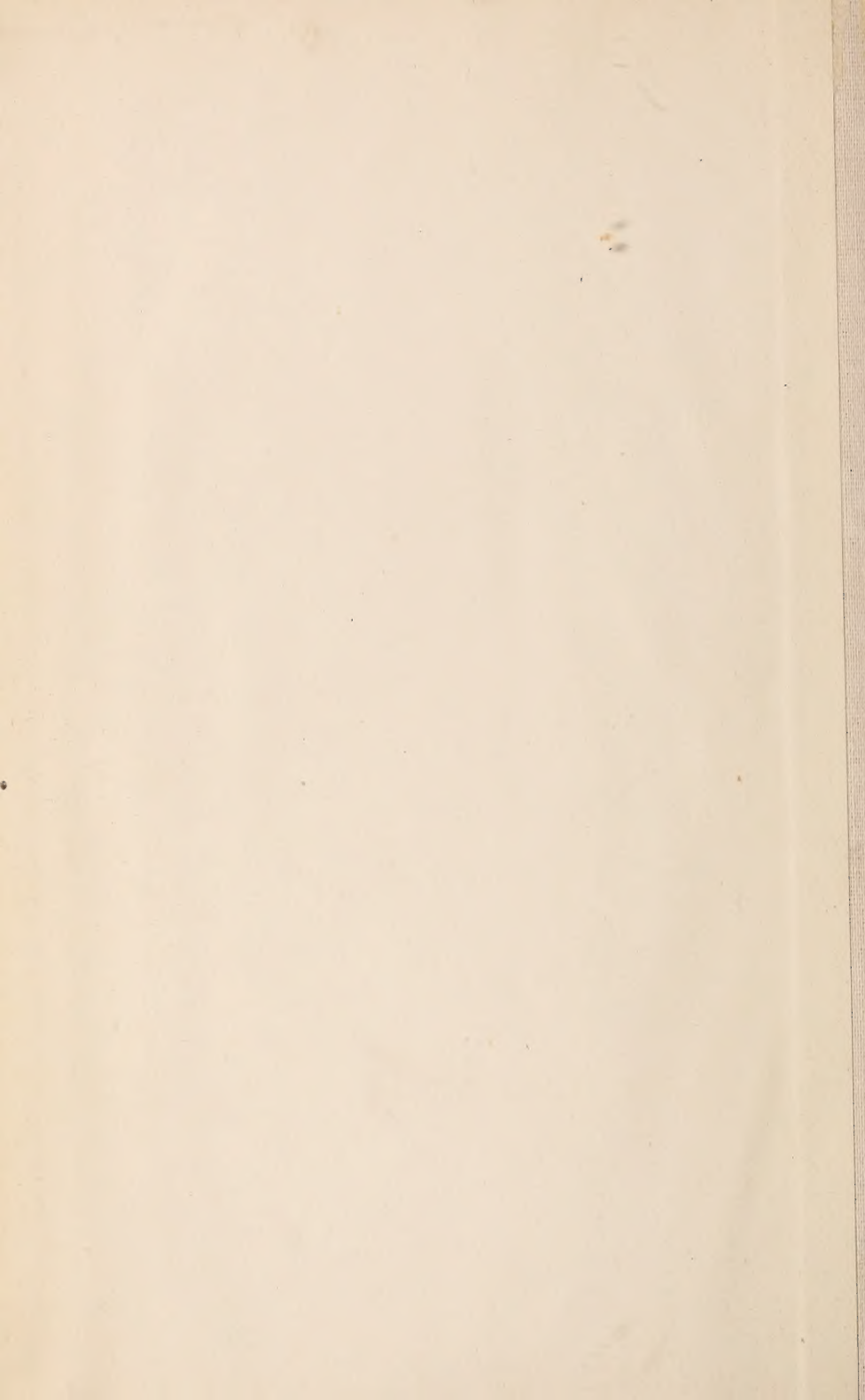
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THE DENTAL REVIEW

DEVOTED TO THE ADVANCEMENT OF
DENTAL SCIENCE

C. N. JOHNSON, M. A., L. D. S., D. D. S.
EDITOR

VOL: XXVII

CHICAGO:
PUBLISHED BY H. D. JUSTI & SON
810 MASONIC TEMPLE
1913



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Vol. XXVII.

CHICAGO, JANUARY, 1913.

No. 1

THE REORGANIZATION OF THE NATIONAL DENTAL ASSOCIATION.*

BY DR. R. OTTOLENGUI, NEW YORK.

I have come to you to talk on this subject as a member of the reorganization committee of the National Dental Association. I want to speak to you along two or three different heads. This talk is not to be simply dry constitution and by-laws talk. I want to give you an insight into the general plan of the reorganization, then I want to tell you what your state society could do in building up this great organization, and what advantage it would be for your society to do this, and in that way I want to demonstrate to you the advantage that it will be to every individual man in this society when the organization is complete.

First then, briefly, let me say that in endeavoring to reorganize an existing institution we must adopt totally different methods from those which might be utilized if we were organizing an association; that is to say, if we had no national organization we would be obliged at once to make and present a perfect plan, or as nearly perfect as the human mind might construct it, present it, adopt it, and complete the organization; but when you have an already existing organization which has enjoyed more or less success for a number of years, and which, therefore, has its advocates, has a number of people associated with it who do not believe in your reorganization plan, then I say it becomes necessary to prepare a transition period. You cannot simply jump from one kind of an organization to another. I say this to explain to you why a tentative plan of reorganization was sent out last year from Cleveland. We were obliged to send out a tentative plan, one in which we asked the state societies to guarantee two-thirds of their

*Read before the Wisconsin State Dental Society, July, 1912.

members, because we felt that the old organization, to use a Missouri expression, "had to be shown." We had to prove to them that the plan, when perfected, would be adopted and would be supported by the state societies in sufficient number to safeguard the interests of the national in reducing dues from \$5.00 per annum to \$2.00 per annum, plus a journal. You must admit that that is quite a reduction. So I say, this two-thirds plan was suggested and the committee understood and had hoped that the state societies understood that it was merely a proposed plan and not an adopted plan, and that every society that would express a desire to come into the reorganized body would have a voice in the adoption of the final plan, and would, therefore, have a voice in the alteration and perfection of the plan before final adoption.

Now, the present situation is just this: It was prophesied that no state society would come in and promise two-thirds of its members, but a great many societies have done that. Massachusetts, with 600 members, has done it; Connecticut, with 400 members, has done it, some of the smaller societies have promised to come in with all their membership. On the other hand, the larger and better organized societies, such as Illinois and Missouri, and some others have not. Pennsylvania and New York are just changing their constitution and by-laws so as to take in their component districts. We have had district societies longer than any other association, but they have never been counted as members of the state. They are all to be brought in now, and we have changed the society from a society of 200 delegate members to a society of 1,500 component members. These societies which are more or less in transition stages, balked at promising two-thirds of their members, with the exception of Ohio, which promised two-thirds, and Indiana, which promised 900 members. That is the proposition which confronted your reorganization committee when we began to get to work for the report we had to present. We feel, therefore, the time has arrived when we may abandon this scheme of asking a society to guarantee anything. We feel that those societies know their mind well enough to know that two-thirds of them will come in. No society could guarantee it and live and keep its treasury unless its men were willing to come in. As a matter of fact, in Ohio they put it before their component societies first and got unanimous consent to the proposition in three of their largest districts. In Connecticut it was carried unanimously and in Massachusetts it was

promised two years ago that they would come in practically in a body, and therefore they thought it very easy to promise two-thirds. We will pass the transition period, and we will come down and give you the latest report of what any state society has received, of how the committee is going to proceed. If the constitution is adopted, no state society will be asked for anything. We simply ask for affiliation. In other words, we ask that the state society shall become a component part of the National. As a component society it shall be entitled to representation in the house of delegates by one member. Now, I want you to get that for a minute. Regardless of maintaining any membership in the national, if Wisconsin will simply pass a resolution here at this meeting that it will affiliate with the reorganized National, it may send one delegate to the house of delegates, which will be the executive body of the National Association. Perhaps some of you are not acquainted with the American Medical Association plan, and I may outline that briefly: The great body of members are divided into two classes, an executive body known as the house of delegates, and a scientific assembly, which is divided into various sections, each section with its own executive management; each section with a chairman, a secretary, a treasurer, and each section managing its own business; but the business of the whole is managed by this house of delegates, which house of delegates is sent by the state societies, which are the components. It is not possible to keep politics out of any organization, but as nearly as possible it is kept out in this way: the house of delegates elects the president, but it may not elect one of its own members as president. Thus the president cannot go around and lobby among his friends for election nor can the delegates elect one themselves to the presidency. The delegates also elect nine men as a board of trustees, and this board of trustees manages all of the business of the association ad interim. It meets twice a year and it transacts its general business, and its special business is the conduct of the journal. Such is the American Medical Association plan, and that is what I mean when I speak of the house of delegates. Now, we cannot copy the American Medical Association plan completely at present. The American Medical Association itself is in a transition period. They consider every member of a component society a member of the American Medical Association, whether he pays dues into the national body or not. That they can do now with their tremendous membership, but that we

dare not do at once. We, in building up this reorganized body, are obliged to hold out something as a reward to the man who comes in. We cannot come to Wisconsin today and say, "Vote to come in, and all of your men can call themselves members of the National Association, whether you contribute to its working fund or not." But I do believe that that can be made to come later.

Now then, they have had two or three kinds of members in the American Medical Association and, finally, they have decided that it is necessary to classify them, and the proposition which is before them at present is to call the state society men members of the American Medical Association, but to call the contributing members, those who subscribed to the journal, Fellows of the American Medical Association. I say the time may come when we may come to that, but at present we will simply consider that the state society is sufficiently represented if we give you one delegate in the house of delegates, regardless of your paying membership in the national. To induce you to come into the national as individuals we propose, as soon as possible, or instead of saying as soon as possible, I should say as soon as advisable, to establish a journal, and to make that journal \$2.00 per year to members of state societies, and that carries with it membership in the National Association. So that any man who is a member of a state society may for \$2.00 become a member of the National Dental Association and have its journal. I believe it will also be advisable—this is a new thought that has come to me, and I have not yet spoken of it to the rest of our committee, but I believe the committee will agree with me—that it will be a good proposition to give to every member who comes into the National Association an engraved certificate of membership, with the idea that he may hang that in his office to advise his patients of the difference between himself and those men who are either non-ethical men or so selfish that they are willing to take everything and give nothing. I believe, gentlemen, that that little proposition, which has only come to me since I have breathed the salubrious air of this town, is a valuable idea. I believe that annual certificate of membership, with its date renewed every year, will be more than worth \$2.00 to every man who hangs it in his office and allows his patients to know just what kind of a body of men he is included in. Now, it seems to me that that is one way in which the National Association can be helpful to the state societies. For example, I understand that

in this state you have not yet obtained your full quota membership because there are certain local societies that are so wrapped up in their local affairs that they cannot see the Wisconsin State Dental Society, nor any need of helping it, nor any need of association with it. The National Association can help you with those men by keeping them out of the National Association until they join with you; by keeping them out of the right of subscribing to the journal until they join with you. In other words, we can keep the journal of the National Association exclusively for its members, and we may do that in a number of ways, but I believe that the simple way of having a flat subscription, and simply giving the journal to our members, will be quite sufficient at the start. That ought to bring your outside men into line.

Now I want to touch on the advantages that may accrue to every individual man by coming into this association, and here I come upon a topic that may for a moment make you believe that I am wandering from my subject. But if any of you gentlemen have ever been up into the mountains you must have noticed this, that the river runs down into the bottom of the valley with the high mountains on each side, and as man has come in he has found it more convenient to build his wagon road along the river, and the houses have come along on the wagon road, and the high road has followed that, and the railroad has come on the other side. So they have all gotten into the habit of living along the river down in the valley, and we forget that the two great mountains up on each side blot out the rest of the world, and so we are restricted to this little narrow view of things. That is the little river of dentistry we have been swimming along. Now I am going to ask you to take a little excursion with me up one of these mountains and look a-field, and see what is beyond; see if there is not a view that might help us if we once got at the root of things and looked into the adjacent country. A number of years ago one of the Vanderbilt family, not named Vanderbilt but one of that family, was sent to me by a physician. I hesitate there because so many men say Mr. So and So, a millionaire, was sent to me, and that is self-gratulation, but that is not the reason with me. This man was sent to me with this statement: "This gentleman has a septic taint of some kind; he has a fever; he has a temperature which begins to exhibit itself about 3 o'clock every afternoon, and rises to about two degrees above normal before he retires. Sleep apparently reduces his tem-

perature, and he has it normal in the morning. He has been to specialists throughout Europe, and nobody has been able to locate the disturbance in this man." I said that that man was a millionaire simply to show you that it was within his means to consult the highest medical authorities in order to learn why he had a fever every afternoon. Finally he got into the hands of a good diagnostician—and let me tell you that a good diagnostician is a man that always arrives at his diagnosis by exclusion; that he must, before he decides on a definite diagnosis, exclude every other possible cause, before he determine what the real cause is. By the time this physician had excluded everything he had excluded everything but the man's teeth. He could not find an unsound place, nor a sign anywhere in the history to explain this constant temperature, unless it might be in his teeth. In those days we did not have the advantage of the assistance of the radiograph, and when he came to me and I looked over his mouth I found mighty good looking dentistry in his mouth. But here was a piece of psychological diagnosis: I found one large amalgam filling in his mouth where all the rest of his teeth were filled with gold, and I said to myself, "the man who put that amalgam filling in a millionaire's mouth, was lazy." There was no reason in the world why he should not have had his full fee to fill that tooth with gold unless he was too lazy to do it, and if he was too lazy perhaps he was too lazy to fill those root canals properly; and I ripped into that filling and found a little bit of cotton in one root canal, and nothing at all in the others. We sterilized those three canals that afternoon, and the temperature was only one degree above normal that night, and inside of a week his temperature had disappeared. So there we have a positive constitutional and continuous disturbance to the roots of a tooth. Since that time we have had the radiograph. I can remember when we had long and earnest discussions on the root canal filling, and men swore they always filled root canals to the ends; but unfortunately for them when Mr. Radiograph comes along and looks at them he shakes his head and says, "you didn't do it." Dr. Hunter came out a little while ago with a wonderful article on "Sepsis," which was absolutely misquoted in the *Literary Digest*. I was off in the country on my vacation, and I was simply inundated from my home office with the letters that were sent to me, begging me to defend the great institution of American dentistry against this awful calumny. But I was not willing to believe that the

Literary Digest had properly quoted that man. I delayed taking any action in this matter until I could get hold of or in touch with a library and get the article itself and read what he had said. When I read it I found he had not said what the *Literary Digest* said he had said. I found when he spoke of American dentistry he had quotation marks on each side. I found he meant that kind of dentistry that is sold spuriously in England and masquerades under the title of American dentistry, to attract patent. I found that in that very article he said there were men in America that did beautiful work; and down in my own heart I thought, "Dr. Hunter, you are altogether too generous to us." We are not doing our whole duty by those who come to us. We are building wonderful bridge work on rotten roots. It is being done; we are not thoroughly filling root canals. We are not thoroughly studying what the little piece of broach left up in the root may mean. So I wrote my editorial, and it was different from those in the other journals, but I don't care, because I know I was right. I know that nothing that has happened in twenty years is going to do as much good for dentistry as Hunter's article. We may deny it and lie about it all we want to, but down in our hearts we know it to be true. We are not treating our patients right. Why is it that the great body of American dentistry allows a disgraceful thing like this to be said about it, and knows it to be true? That brings me back to my subject, and here is what I want you to see: Only four or five months ago there was a meeting down in Trenton, New Jersey, the kind of meeting, gentlemen, that we must have all over this country, and just as soon as possible. It was a meeting held by the local society of dentists in Trenton, N. J., to which was invited the county medical society, and these men met jointly to listen to a paper by M. L. Rhein on "Root Canal Filling and Sepsis and Asepsis in Dentistry." After Dr. Rhein had shown his radiographs, shown imperfect root fillings detected by the radiograph, proved what could be done by showing those same teeth properly filled afterwards, radiographs of perfect root canal fillings in the same teeth, radiographs that showed the septic conditions having disappeared and the health of the patient being restored, then, in the course of the discussion, one of the medical men said he was very much surprised to find that a prominent man in the dental world was admitting that his confreres were so incompetent. Dr. Rhein got up—and this is the particular message I have come all the

way to Wisconsin to bring to you—and said: “Our men are not incompetent. The incompetence is due to the medical profession. You don’t appreciate that you are treating diseases and taking diseases for treatment when you cannot cure them, because the cause lies in improper root canal work, and you are not sending that patient back to a dentist to have that work undone and properly done over. You are taking \$500, \$700, \$1,000 for appendicitis operations, which are not one-half as difficult to do as some of the root canal work which our men could do if we could get paid for it, and we would get paid for it if you would tell your patients frankly, ‘I cannot cure you, you have got to go on suffering with this septic taint in your system unless you go to the right kind of a dentist and pay him the right kind of money that will make it possible for him to give the time to it that his work requires’; and if you medical men will cooperate with us to that extent and send your patients to us, and educate them up to the fact that we are your collaborators and co-workers and that you cannot get along without us, we will deliver the goods. But unfortunately we are not in a position yet to make these people believe that their ill health depends upon their teeth. They still have such faith in their doctor that they think that after they get sick they can go to you and you can cure them, and you cannot.” Personally I have been suffering with gastric disorder, and we have only within the last few weeks discovered that a tooth which has always been under suspicion, really had a broken broach in it, and that the pus that I had supposed was coming from around another tooth was coming from that tooth, and the answer was to go in surgically and cut off that piece of root, with that piece of broach in it, and my gastric trouble is disappearing, or the disorder I have been suffering from for months, is gone. That may be a coincidence, but I was led to it because of another coincidence. This patient was paying a neuritis specialist \$5.00 a visit and \$10.00, when he used electricity, to cure that neuritis which never would have been cured unless the cause of it was cured. Another case that I must cite to you because it is not always the teeth that make the trouble. I had a patient come to me suffering with facial neuralgia, which her physician, a wise man, attributed to her upper teeth; but there was nothing the matter with her upper teeth. Two or three years went by and she kept getting worse and worse, when finally she came in and said the pain was spreading to her lower jaw. Down in the lower jaw we found three teeth well filled with

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amalgam. The radiograph showed, however, that they were very close to the pulp. So you see it will not do always to leave the pulps in. These teeth were opened, and these pulps were found to be alive, all of them, but filled with pathological cells. And that woman, when her teeth were properly treated and filled down to the ends of the roots, as can be shown by the radiographs, and proper fillings put in, which were secondary—when she was treated and her teeth made right, her neuralgia of five years' standing, disappeared. Now, I tell you that story for this reason: I sent that woman a large bill and it was paid promptly. For her sister I did more work and sent a bill for about the same amount of money; I mean by that, more work in time, and she came over and said that she appreciated my services, but they had a large family and couldn't I make some little reduction? Why? That was just plain dentistry and she didn't value it. For the other woman, I not only filled her teeth, but cured her neuralgia, and she was glad to get rid of that at any price. Where is the connection between all this and the American Medical Association plan? If we have a live journal in our association it is going to teach the medical profession in such a way, it is going to teach the dental profession in such a way that we are going to protect ourselves, and make the medical men know that we are doing our work better, make them send patients to us, make the medical men tell their patients the value of our services, and when they come to us they are going to pay for it, and when they pay for it I believe there is not a man in this room that cannot deliver the work. It is simply a question of not being able to get the money to give the proper time for the technique. I don't know what the men of Wisconsin get for that kind of work, but I do know that I have seen fee cards with root treatment 75 cents, or root treatment \$1.00, and on those same cards, gold fillings \$5.00. The patients have been taught to believe that a gold filling is valuable. It is not half as valuable to a patient as a correct root canal filling.

That is what you can do for the new National Dental Association, and what the National Dental Association can do for you if the men throughout the country cooperate, work as communities to this end. But I am told that it is useless, absolutely useless, to expect cooperation from men; that the dentists of this country, 95 per cent of them, cannot afford to increase their expenses \$2.00 a year. Now, I want to know if that is true. I want to know if there is a man in this room that would rise up and admit

that he cannot afford to increase his expenses \$2.00 a year. Is there one? I don't believe it. You, gentlemen, have all admitted that you can afford it. Now, will you do it? I do not want the state society to guarantee any membership. I want you men to sign these cards now, and turn them in to your secretary and promise that in 1913 you will come in. Let us have your names. I want this society not only to have its one delegate, but I want you to have at least 100 members promised by September, so that you can start with two delegates in the house of delegates. I want you to think just what \$2.00 a year is. Excluding Sundays it is less than a cent a day. Now I have told you gentlemen what your duty is. It is your duty.

PUBLIC SERVICE ABROAD.*

BY C. N. JOHNSON, M. A., L.D.S., D.D.S., CHICAGO.

I have been asked to discuss something of what is being done in the way of public service in those countries which I had the pleasure of visiting during the past summer. At Honolulu I found the dentists thoroughly alive to the importance of this matter and anxious to begin work, but owing to lack of experience in launching such movements, and difficulty in gaining the ear of their public officials, very little has so far been accomplished. I look for them in the near future to do something of note in this direction, because they are the right kind of men, with the most liberal and progressive spirit, and I am sure their public officials will listen to their appeal when it is properly presented.

At the Figi Islands—well I did not see much evidence of a campaign in this direction in Figi, or in Rarotonga or Tahiti.

Throughout Australia, and New Zealand there is today an interest in the public weal on the part of the government that is not equaled in any country so far as I know unless it is in Germany. There is no difficulty in gaining the ear of government in any movement tending to the welfare of the people. A notable example of this was the government patronage of the Third Australian Dental Congress, which convened at Brisbane, Queensland, last July. The congress was opened by the Governor, Sir William MacGregor,

*Read before the Chicago Dental Society, October 15, 1912.

in an address which showed his keen appreciation of the importance of oral hygiene. Not only is the government cordial toward any movement of this character, but the public press—that great arbiter of public opinion—is keenly alert in the consideration of such questions. In this connection I cannot do better than read you an editorial published in *The Telegraph*, one of the leading dailies of Brisbane, on the occasion of the dental congress in that city. This editorial was its leader for July 9th, 1912, while the congress was still in session:

“CARE OF CHILDREN’S TEETH.

“Congratulations extended to the government, by the dental congress, in regard to the special care now taken of the teeth of State school children, are richly deserved. And the work thus undertaken, expensive as it undoubtedly is will prove to be most reproductive, for the state’s best asset is the health of the people. The governor, in his uniquely splendid address of welcome, directed attention to the important part played in connection with the teeth by the character of the water supply of the community. That important subject was further elaborated in the course of the paper read by the president of the Brisbane Dental Hospital. In a vast territory like Queensland adequate and healthful water supply is one of the most formidable problems by which the people are confronted. Country communities, more particularly those in western areas, where only tank or bore water is obtainable, the health of the people is always in more or less danger. Repeatedly the danger of consuming unboiled tank water has been the theme of scientific dissertations, particularly in connection with lead poisoning. In the torrid west, the sun’s rays pouring down on the galvanized iron tank itself, steadily disintegrate the iron, and when rain pours down on the roof, it washes a heavy precipitate into the tank, and that precipitate is very injurious to health. Children, in particular, suffer from that cause, and the worst effects are to be noted in the teeth. It is much to the credit of scientific men in our midst, men such as the government analyst, that this matter was brought home so forcibly to the attention of the government, and that thereon the present complete system of inspection was inaugurated. According to periodical reports, much good work has been done by the staff employed in the work of inspecting the teeth of state school children. On that good work, the standard of health should

be immensely improved and, therefore, statistics concerning the decline of the death rate in due course should tell a flattering tale.

"Dr. Johnson, of Chicago, in speaking on this subject, congratulated Australia on the fact that she has not any pauperdom against which to contend in dealing with the teeth, and therefore with the general health of state school children. It may interest the distinguished visitor to know that the children of the wage earners of this country are the very special care of the state. Those children are educated free of cost to their parents. They may win their way, without one farthing of expense to their parents, to the highest educational honors possible, even to those obtainable at the most celebrated universities in the world. The state looks after their eyesight, and after their teeth. In every way they are most carefully tended under state direction, and at state cost. And their parents are free from income tax, because the exemption under that tax excludes them from such taxation. But, once again, it may be stated that heavy as is the expense entailed in all this elaborate system, it is in the highest sense reproductive. In the improved health of the rising generation is a guarantee of regular reinforcements of sturdy, healthy men and women, to carry on the generations, and to assist in carrying the development of the country in every direction to the highest possible pitch. Our call for population has to be modulated to accord with the call for health. Better a small healthy community than seething masses of degenerates, both mental and physical. And in directing the efforts of science in its cooperation with the state in regard to the health of the rising generation, interchange of ideas and knowledge, such as that which characterises assemblies, such as this dental congress, is simply invaluable. It is a matter of intense public interest. It is a matter of enormous public gain, for it adds so greatly to our accumulated assets of scientific knowledge. That the application of such knowledge to the conservation of the health of our state school children must have a marked effect on future generations goes without the saying. It is a splendid work, worthy of its object, cheap, indeed, at the price."

Such a philanthropic and broad-minded statement as that coming from the public press is more significant than one can well imagine at a casual reflection, and I humbly submit that it is a very

worthy example for our own daily press to follow. Fortunately for the future generations the press of this country is rapidly awakening to the importance of this matter, though I must admit that I have never yet seen in any of our daily papers as broad-minded and comprehensive a statement of the question as this contained in the *Brisbane Telegraph*. It so perfectly reflects the attitude of the government and the people of Australia toward this question that I do not think it necessary to further refer to it at this time.

In New Zealand I found much the same condition. It is only necessary to prove to their public officials the utility of any such movement and it will be carried out most generously. I had the honor of a special invitation to attend a sitting of their parliament at Wellington, and during the recess was entertained at tea by the Honorable R. Heaton Rhodes, M. P., Post Master General, Minister of Public Health, Minister of Hospitals and Charitable Aid, and the Mental Hospital Department. Here I met the Honorable James Allen, M. P., Minister of Finance, Colonial Secretary, etc. It was a splendid combination before which to broach any subject connected with the public health, and I imagine the interview was adroitly arranged by my good friend, M. E. Denniston, President of the Wellington branch of the New Zealand Dental Association.

In any event, I came away from that delightful little gathering with the firm conviction that dental matters had moved at least one step further up in governmental recognition in that splendid country of New Zealand.

In summing up what is being done abroad I cannot let the opportunity pass without referring to the profound impression which the announcement of Mr. Rosenwald's magnificent donation to the welfare of the children of Chicago made upon the people wherever I went. I have previously expressed myself as gratified at the attitude of foreign governments toward public health measures, but I am frank to confess that I was made to swell with pride, when on every occasion, where this donation was mentioned, the statement was freely made that no place on the face of the earth could men be found so open-hearted, so magnificently liberal, and so philanthropic as were the wealthy men of America. And, sir, when this statement was made I was proud to be an American, proud of my association with men whose hearts are great enough to reach out and lend the helping hand to thousands of their weaker fellowmen, to reach out and rescue thousands whom

they will never see, and thousands yet unborn. Our government has not yet learned the fundamental lesson that public health is its most precious asset, but the splendid manhood of some of our private citizens is working miracles in proving to the government the significance of caring for those who cannot care for themselves. He who raises by his hands or by his means a weaker fellowman, and thereby increases his efficiency in life, is building better for the future of humanity than he who, by the glare of trumpets, takes a kingdom. All honor to Rosenwald, and to the Forsyths, and to other men of their kind who are making humanity better by their beneficence, and adding to the sum of human happiness.

THE PUBLICITY MOVEMENT IN THE STATE.*

BY C. B. WARNER, D.D.S., URBANA, ILL.

It is a pleasure to again meet with you, and to come into the goodfellowship of your society. Especially is this so when you will remember that I hail from a dry town, one that has been dry for some time. When I gaze upon the happy faces of my friends Dr. D. and Dr. G. and see how robust they appear to be, no wonder I accept your invitation.

The matter of public service is easily the important topic before the dental profession today. The magazines are full of it, the dental societies talk about it, and it occupies a large share of the thought of the individual dentist. This movement came along with that of oral hygiene, and with it came the publicity movement as a necessary adjunct. The public dental education campaign must be carried out along with the public service work in order to accomplish results. Because we are well acquainted with the dental needs of the community it does not imply that our neighbors are. The man on the street knows that he has teeth, and when they hurt him he goes to the dentist, but he does not spend any time thinking upon dentistry as a matter of public service. It is the business of a publicity committee to make him think.

There have been campaigns of local interest in the matter of dental education, but it remained with the Illinois State Dental Society to inaugurate one that was comprehensive and state wide.

*Read before the Chicago Dental Society, October, 1912.

Such a campaign, organized a year ago, has now passed the boundaries of this state and spread throughout the country. Even some of the foreign countries are using the series compiled. In this much credit is due your society for encouragement and funds, without which the work would have hardly been undertaken.

It is strange that your city, which helped inaugurate this movement, should be backward in reaping the benefits, but it has so happened, notwithstanding the efforts that have been made for dental education here. The service, however, is now running in the *Chicago Evening World*, and some of the other dailies have agreed to use some of the articles.

We have no difficulty with the publishers in the smaller cities, as these educational articles are just what they are looking for. We now operate under a new contract that will eliminate any difficulty that we may have had in the past when the movement was new. Last year we published over 78,000 of these half-column articles, and we are just making our start. The field of public dental education is so large that we feel that we have only scratched the surface. The people are awakening to the benefits of a clean mouth, and wish to know what to do. It is almost criminal to refuse them this knowledge.

I am pleased to have the opportunity to announce to your society that the members of the publicity committee in this state have pledged among themselves to assure you service that will be satisfactory to you in educational lines, or return your money. In fact, the money you gave us we have deposited again with your treasurer, as a guarantee. As the cost of operating this service throughout the state has been more than the income, we have made this deposit out of our own pockets. If this money needs to be returned to you and the state society does not come to the relief of its committee, then we shall make you a gift of the money by the individual members of this committee. We do this because we promised, and we intend to fulfil our promises; they were not given lightly, even though we were acting for an organization.

I have dwelt largely upon that line of public service with which I am best acquainted, but there are others of equal importance. The work of Dr. Logan in the promoting of lectures is excellent. Dr. Evans has opened up a promising field along health lines.

We should have a moving-picture film in this state demonstrating oral hygiene.

What all this effort will result in I do not know, of this, however, we may be assured—that dental work will be more accurate than ever before, the treatment of diseased mouths will be more universal, the health of our children will be conserved, and you will be a part of the great instrument bringing about these splendid results.

THE RELATIONSHIP BETWEEN ORAL DISEASES AND MENTAL DEFECTS.*

BY DR. CLARA H. TOWN,

(Director of the Department of Clinical Psychology in the Illinois State School and Colony for the Feeble Minded, Lincoln, Ill.)

Ladies and Gentlemen: For the past ten or fifteen years there has been great concentration of attention on the various problems concerning mentally retarded children, both from the practical standpoint of the schoolman and from the scholarly standpoint of the scientist. So many of the children of the public schools fail to keep pace with the requirements of the curriculum, that it has begun to be felt as a burden by the class teacher and the educator, and the question arises, WHY? In response to this question, Why, there has been collected a great deal of information on the subject. This information may be grouped in two classes. The first class contains all that has been collected through the statistical mode of attack, and the second class consists of data which has been collected as the result of intensive study of individual cases by the clinical method, as it is called.

The collected statistics have given us a very decided idea of the facts as they exist. We know positively that in thirty-one representative American cities, more than one-third of the public school population is retarded pedagogically. After this fact was established the attention of the investigators was turned to the causes of this widespread retardation. The investigation followed the lines of the environment, the physical condition of the children, and the school curriculum. The first facts that came out in the investigation were that one great cause of this retardation was the irregular attendance. Of course, this needed an explanation. The next

*Delivered before the Chicago Dental Society, October 15, 1912.

group of facts which attracted attention was the great number of physical defects from which the children were suffering. To the surprise of many, however, it was found in city after city that the normal children who made the grades in the prescribed time, suffered from just as great a number of defects as did the backward children; that is, when the two groups were taken as groups, and judged as such. It remained for the New York investigators to discover why this was so. They found it was only true so long as all the physical defects were considered in a group, but when each defect was taken separately and studied, its effect on retardation was easily discovered. Mr. Leonard P. Ayres, of the Russell Sage Foundation, after the investigation of New York school children, was able to publish a little table, stating numerically the retarding effect of several physical defects. This little table tells us that visual defects have apparently no retarding effect; that enlarged glands have the greatest, 14.9 per cent, and that adenoids, hypertrophied tonsils, and defective teeth follow in regular decreasing order, defective teeth causing a retardation of 5.9 per cent. I think it is interesting to note that these physical defects are all such as affect the constitution as a whole. There is another piece of information that has been published recently by the free school clinics in Cleveland, which substantiates the connection between defective teeth and defective mentality. The dentists of Cleveland examined a certain number of the public school children; they then treated the teeth of these children, and after the mouths were in a healthy condition repeated again a set of psychological tests which had been tried on the children at the first examination. They found that these children as a group showed an increased efficiency of 98 per cent, and that each child in the group showed increased efficiency. The results of a large number of cases like this are impressive, but I think we can get a really sympathetic understanding of the connection between the physical condition and the mental, by turning to the individual studies, the intensive studies of cases such as are made at the Psychological Clinic at the University of Pennsylvania. I mention this clinic particularly because it is the first of its kind in the country, and also because I had the privilege of working there for a number of years. This clinic is an adjunct to the psychological department of the University of Pennsylvania. It is under the direct supervision of Professor Witmer, who is its founder. It is his aim to bring to bear on the study of the child

and the solution of the problem of the child the combined fruits of all sciences. Defective children of all types and conditions are brought there for examination, for diagnosis, for prognosis and for advice. The examination is a very exhaustive one. It is not performed by one man, but by a group of trained individuals. Each child is examined physically, mentally, pedagogically, the history is investigated very thoroughly and the social worker visits the home and finds out all she can about the child's environment. The examiners are psychologists, social workers, and physicians; but they are not only examiners, they follow up the work just as the Dental Clinic in Cleveland has done. If a child is found to have an irremediable physical defect, he is taken in hand at once by the social worker, and taken to the various medical clinics which are indicated by the examination. Of course, the clinic is very fortunately situated in that it is very near a great medical school. After the child has been taken to the medical clinics and received treatment indicated, glasses been fitted, adenoids removed, or teeth attended to, his case is still followed by the social worker, and when he is in a better condition of health he is brought to the laboratory again, examined once more by the psychologist, who can now tell how much actual mental deficiency there is, and how much the previously noted mental or moral deviation was dependent upon the physical defects. There are hundreds of cases on file at the clinic which show the intimate relationship between the physical defects and mental deviation and moral deviation as well. I could cite case after case where mental improvement is reported after defects of vision, of hearing, or of nutrition were corrected, after adenoids were removed, or after irritative conditions of the mouth, gums or teeth were corrected. The latter conditions, of course, are most interesting to you.

Of all the cases that are brought to the psychological clinic, I think there are none so difficult to diagnose as the incorrigible boys and girls. These children are brought with a dual question. We are asked, is this child a moral imbecile or a bad boy? If he is a bad boy, what line of treatment shall we pursue in order to develop him into a normally acting individual? As a rule they are bright children, and they are not apparently seriously handicapped physically. They are the very cases whose mouths should be examined carefully. One case in point was a little fellow who was brought to the psychological clinic. His conduct was absolutely beyond the

control of his parents and his school teacher. He had no regard for truth and no regard for the property of others. He would lie with apparently no cause, and he had reached the point where he would steal money from neighbors. His lack of nervous control had reached such a climax that at school he would insist upon answering any question that was given the class. He could do this because he was a bright boy. In spite of his conduct, his class record was good so far as the studies were concerned. This child had been put under probation by the Juvenile Court and he had been sent to one of the special classes in the public schools; he had been incarcerated three or four times in the House of Detention to frighten him, but nothing was of any avail. He was brought to the Psychological Clinic and was given a thorough examination. It was found that his gums were very much inflamed and swollen, and that his second teeth were forcing their way through the gums, although the first teeth had not been shed. Dr. Witmer, who is careful in noticing such conditions, had him sent to the Dental Clinic at the University, and the Dean of the Dental Clinic, Dr. Kirk, was at once interested in the case. He diagnosed it as a case of "Dental Stress" or nervous irritation, leading to choreic involvement, which he said was due to a general nervous irritability which often occurred at this stage of exchange of the permanent teeth for the deciduous teeth, and he gave as his opinion that the condition of impacted dentition existing in this boy's mouth was enough to explain all of his conduct. He extracted one of the teeth immediately and this seemed to have a magical effect. The boy almost immediately showed a different spirit. He became friendly and reasonable. He was taken in charge immediately by the Clinic, sent to a school where he received sympathetic and intelligent help, a slight eye defect was corrected by glasses, and the boy went regularly to the dental clinic where the unnecessary teeth were extracted, one at a time. The character of this boy has been very materially changed. He is now healthy and normal, has good manners, good morals, has better control of his temper, and we think will develop into a good citizen.

Professor Upson of the Western Reserve University at Cleveland, in the course of an investigation into the causal relation of impacted and otherwise diseased teeth and insanity, discovered three remarkable cases which I think will be of interest to you and shall relate briefly.

The first case was a young man, 21 years of age, who had developed from a bright, honest little boy into a thief, burglar and convict. He had always been witty and bright. He had been graduated from a high school at 16, and was always tender and kind to animals and children. This last fact, of course, would exclude at once any idea of moral imbecility, because moral imbeciles are always marked by cruel impulses; but that he was not mentally normal was evidenced by periodic insane attacks. During attacks he was maniacal and there were acute visual hallucinations. This state lasted for some hours and was followed by irritability. The boy spent two years in the House of Correction. He went very willingly because he felt his lack of self-control and thought he might be cured, but he came back not cured and with a contempt for all law and order.

Professor Upson had a skiagraph made of the boy's mouth, and he found a wisdom tooth badly impacted, several of the molars abscessed at the roots and also one of the incisors. He extracted all these teeth. A month later the boy went home and obtained a position, his mental condition gradually improving. Several months later another abscessed tooth was extracted. Immediately following the extraction there was a great increase of all the nervous symptoms, but these never amounted to insanity as in former attacks. Two weeks later, however, there was a wonderful change for the better, and the boy has steadily improved ever since. There has been no return of the immoral or mental symptoms. The two other cases were even more remarkable because they were older people. They were both confirmed alcoholics. (One, a man, had been committed to the workhouse ninety times in thirty years, and the other, a woman, thirty times in ten years. (Laughter.) Both were very well meaning, industrious people when they were sober. They both suffered from headache, toothache and sleeplessness. The man had a periodic craving for liquor. A skiagraphic examination was made of the man's mouth, and it was found that two of his molars were badly abscessed. These were extracted, and at the time the case was reported fifteen months had elapsed and the man had been perfectly sober and industrious during these fifteen months. In the case of the woman the result was equally as good. She had a number of decayed teeth and deeply ulcerated gums; in fact, all of her teeth were badly decayed. All of her teeth were extracted, nineteen, I believe she had, and immediately after this

operation she went on a spree (laughter), but after that one spree she remained sober and industrious. Such cases as these prove to us that there is an intimate connection between the conditions of the mouth and the condition of the mind, and make us think that the dental work that is done with school children may prevent many cases of immorality and incorrigibility. At least, we would judge that they would.

Dr. Black said you may be interested to know something of the psychological examinations such as are made at the psychological clinic in Philadelphia, and also at the institution here in Illinois.

There are various tests, and among them one series for diagnosis, which we have adopted from the French and which has become quite popular in the last few years. A man by the name of Alfred Binet, a Frenchman, made a life study of the developing mind of the child. He evolved a system of tests which are supposed to test the various mental abilities of the child when they first appear, and again at later stages of development. There is a group of tests for each age from two years on to fifteen with one or two exceptions. Every ability is supposed to be tested; memory is tested, also the development of the idea of form, time, number, the association of ideas, reasoning power, imagination, in short almost every mental faculty is tested, not only once, but again at each stage of its development. These tests have been tried out on great numbers of normal children, and the results indicate that there is a correlation between these age groups and the normal age of the child. Other psychological tests are based on the perfection of function, these on development of function. By the usual method the norm for memory, for example, is obtained through a great many tests of normal individuals. If you test the memory of a certain individual, you compare the result with the norm derived from the large group. By the Binet method, if the child passes the fifth year group, it is only five years developed, even though the child is fifteen years of age. These tests are of great practical use for schools because they help in placing children and save time that is wasted in trying to teach a child of a retarded mental age by methods adapted to its real age. One of the greatest benefits of these tests is that it enables one to judge quickly whether the child is feeble-minded or not, which is one of the great problems of this age. We have in this state 18,890 feeble-minded individuals; only 1,400 of these are taken care of by the state at

Lincoln. As to the rest of them, we are leaving them out in the community. We can go to the public schools, we can test any of the children who have reached the age of ten and in an hour or so can tell whether they are feeble-minded or not. The test is simple. It can be made by anybody who has been trained in a psychological laboratory, and without the use of apparatus. On account of the diagnostic value of these tests they are proving very valuable in the public school work in this country.

WHAT THE PRESENT MOVEMENT MEANS TO THE DENTIST AND THE COMMUNITY.*

BY DR. F. B. MOOREHEAD, CHICAGO.

As to the value to the dentist and community resulting from this new movement; in the first place, it gives the dentist a clear-cut well defined opportunity to discharge a moral responsibility. That is the first thing it does. It gives him a chance to stand up and be counted as a man among men, to take his place as a citizen, a worthy citizen, and to do his part in this far-reaching movement in the interest of the better health of all the people.

The mouth in its relationship to the composite organism is one of the most important topics in the world of medicine today. If I had time I could elaborate it. Please let the statement stand for what it is worth. The dentist is the only man who can solve it. It is a vital problem which the dentist alone can solve. It seems to me that no class of men ever had placed before them a challenge so insistent as that. It is a long, loud call from every class and from every clime on the face of the earth to the dental profession. It gives the dentist a chance to prove himself a social asset and not a social liability.

A great deal has been said by a great many people in a not very complementary way about dentists. For instance, this statement is frequently made: "Look out for the dentist and the plumber." It has a bit of humor in it; it has pathos in it, too.

This movement gives the dentist a chance, if he is a man, to prove that he is a moral asset and not a moral liability to society. It gives him a chance to prove that he is a worthy steward of highly

*Delivered before the Chicago Dental Society, October 15, 1912.

specialized talents. Into the keeping of his hands is placed a knowledge and skill possessed by no other class of men on the face of the earth. Into his safe keeping is placed the skill, the highly classified skill, a possibility for service, possessed by no other class of men, and if he locks up his sympathies and denies the needs of the children, the poor, the prejudiced, and the ignorant, he starves his own soul, dwarfs his own character, and adds fuel to the flame of anarchy. He makes wider the chasm between the so-called privileged classes and the great masses of people. He divorces himself from contact with men and becomes not their friend but their enemy. Until he becomes a friend and understands the poor people, he cannot help them. He can do nothing for them.

One of the most positive facts in the whole world of sociology and applied psychology is this, that there must be a definite sympathy; a sympathetic understanding; a co-operation and response between the helper and the one to be helped; between the teacher and the taught, if you please. You cannot do good to any man unless he bears a sympathetic relation to you. To do good to these people you must be, first of all, a man with a man's heart and a man's sympathy for people who need help. I do not know of any opportunity that has ever given to the dental profession so great and important as this. It gives them a chance to prove that they are their brother's keeper, and that they can play the part of the Good Samaritan; that they can help the people who are in need who have fallen by the wayside, and who need their kindly administrations. Furthermore, it gives the dentist a chance to refute the charge that is being made, and has been made with some degree of truth, at times, that he is selfish, an advertiser, and a cheap politician in this movement.

This movement affords an opportunity just like all similar movements, for a certain type of men to get in the band wagon, throw out their banner and to advertise and seek political preferment, to get jobs and to make out of it all sorts of capital. I have more contempt for the cheap politician than I have for any other class of men that walk God's green earth. I think the cheapest of all cheap men is the so-called "Ward Politician." I am sorry to say that we have such in the profession. I have been in various cities and towns in this state and have talked about this matter with the boys and girls, their parents, and with business men, and the charge has been made at times that the dentist is seeking but

one thing; and that is to enlarge his patronage. The charge is unkind. It is unfair. It is untrue, absolutely untrue. (Applause.) You cannot find another class of men who toil with their heads, their hands or their hearts, who are as willing to help the helpless as the physician or dentist. (Applause.) You do not see the business man leave his place of business, lock his door, and go out to help the people. You do not find him doing that. He does not leave his place of business in the hands of subordinates, and hold clinics for the improvement of the health, mind and morals of his fellowmen. No, he does not do that.

There is no class of men who does so much for his fellowmen in a practical, helpful way as the men who practice medicine or any branch of it. If the dentist is a true man, and loves his work, he does not forget his moral responsibility.

Unfortunately we have a few who like to be elected to office, so they may have a chance to exploit their wares and sell their cheap goods, but let these men know that they may get their jobs, they may "endure for a season," but sooner or later they will be classified, and their numbers will be taken, and they will be placed in the casket of oblivion by their compeers. It does not take long to find out who the cheap politician is, and it does not take a sober, sane society like this very long to determine what to do with him. But I hope that the sober minded man of this and of other cities will appreciate the fact that the great majority—yes, 95 per cent of our men are sincere and honest in their efforts to help in this great movement.

Second, the value of this movement to the community. The value of dentistry to the community is now a topic which is engaging the attention of a great many cities. First of all, the people learn, as I stated a moment ago, that the dentist is unselfish in his efforts to help them; that he really wants to be a friend; that he wants to do the people good. When the people feel that the dentist is sincere, that he is a genuine friend, that he is true blue, they are willing to travel with him and learn from him. But, if they feel that they are being patronized he can do nothing for them, absolutely nothing.

A man, if he would do good in this work, must of necessity be sincere or he cannot accomplish one solitary thing. He must be sincere. There is no class of people in the world so quick to read the marks of insincerity as the poor. They will read your motives

and interpret them correctly. Further, through this movement the people learn the true meaning and value of hygiene, and that it is one of the most important lessons they can learn.

We ought to know a great deal more about hygiene than we do. You and I are not good stewards unless we practice to the highest point possible the fundamental principles of hygiene in our homes and in our offices. We think we do.

The report has recently come from Johns Hopkins University that a species of fly—the stable fly—is responsible for the transmission of infantile paralysis. This discovery is of widespread significance. There is no disease which physician and parent fears more than infantile paralysis. Scarlet fever, smallpox and diphtheria are not to be compared to infantile paralysis, and think what it is going to mean to the children of the whole country if the means by which that disease is transmitted has been determined.

We will soon learn how to deal with this particular fly—that's hygiene.

Again, the people learn the far-reaching effects of what to them are insignificant irritations. If all the parents in America could know of the work of Dr. Upson and the work being done in the various sociological laboratories of the country, and appreciate its significance, what a splendid thing it would be for all the people.

Your business is to teach these people these things. If you are true to your work, you are one of the most important educators society has today, disseminating the type of information which is fundamentally necessary to the well being and happiness of your patients. The people you teach in turn themselves become educators. The thing goes on with accumulated energy and after a while an intelligent, educated people will demand the highest and the best that man can give them in professional services, and the dentist will be regarded as a real scientific man, and when that time comes the quack and politician will be known and read of all men.

WORKING OUT THE PROBLEM OF THE SCHOOL DENTAL INSPECTION.*

BY F. F. MOLT, D.D.S., CHICAGO, ILL.

It has been estimated that it has taken thirty million years for the primordial amoeba to develop into the highly coordinated man of today and of this astounding length of time our modern industrial period occupies the infinitesimal portion of one hundred years. During these one hundred years we have changed, at first slowly and of late more rapidly, from a race of men who lived by the sweat of their brows, who accomplished their labors by hand, and worked, ate, slept and played close to Mother Nature, to a race that has subjugated nature and now makes natural forces accomplish almost all the work formerly done by man-power. The tendency of today is to develop the brain and let the body take care of itself; and the inevitable result is a physical deterioration, the existence of which is only beginning to be recognized.

A century ago only a little over three per cent of our population was included in the cities; today our urban population is thirty-three per cent and in the older states the percentage is unbelievably high, Massachusetts, 91 per cent; New York, 72 per cent; Rhode Island, 95 per cent; Ohio, 48 per cent; Illinois, 54 per cent.

A century ago our ancestors as children romped in open meadows, did the "chores," breathed untainted air, ate untainted food. Today, in the complexity of modern conditions, we crowd ourselves into cramped city quarters, we have our manual labor done for us, we breathe vitiated air, and eat food as complex as our existence, sweetened, flavored and seasoned to tempt an appetite undeveloped by natural bodily exercise. And what is more serious, in our mad struggle for supremacy we are loading our bodies down with fatigue poisons, lessening resistance, inviting contagion and the maladies of adult life. This is not a word picture of the individual, but of man as a whole, and it is not the pessimistic outlook of a misanthrope, for the existence of these social conditions is apparent.

The industrial development throughout the world has instigated a greed for gain; and the growth of cities; the accentuation of the extremes of poverty and luxury attendant on the unequal distribution of wealth; the overcrowding in cities, and the consequent deteriora-

*Read before the Illinois State Dental Society, May, 1912.

tion in physical well-being; all have resulted from this wild scramble for riches. Whether or not there is any probability of a reversal of this tendency, we will not attempt to say; we realize only what conditions it has brought and that we must strive to remedy them.

In the study of sociology we find that beginning with an average of physical and mental capacity we have numerically decreasing groups of increasing efficiency. We also have groups of decreasing efficiency below the average. Those below the average tend to become non-producers—to be carried at the expense of those above—the producers. “*Mens Sana in Corpore Sano*” is an adage oft repeated. In spite of this we have been for years improving our educational facilities and disregarding utterly the body which must maintain the mind, and only recently have we awakened to the realization that mental efficiency cannot be maintained without physical support, and that conditions artificially produced must be artificially remedied.

Retardation in schools is looked upon by sociologists as an important factor in this question. Several elements enter into this problem but none has greater bearing than that of physical defectiveness, and none apparently is more susceptible to elimination. Many evils follow on retardation. The added expense of carrying children as “repeaters” (those who are doing the work in the grade for the second, third, or even fourth time) is only one economic aspect, for we must realize that these children, failing time and time again in promotion, become discouraged, and, when the age is reached beyond which there is no compulsion in school attendance, leave, having acquired two-thirds, one-half or perhaps only one-third of the common school education, and being utterly unfitted mentally to make their way in the struggle for existence.

It is inevitable that a great proportion of these should become non-producers, criminals, paupers, and insane. Eugenics would control the sequence of children brought forth by this class; eugenics, their environment, but it would be far more simple to eliminate in a great measure the factor of this class itself. Conservation is in the air. Our greatest national resource is our human asset; therefore, conservation in this direction will be economically of infinite benefit.

It has been the history of all altruistic movements that they have invariably had their inception in the hands of so-called “cranks” who have lived to see their ideas formulated into public

activities, after they have been temporarily carried by private means and private enthusiasm.

The matter of health conservation and race improvement has been no exception to this rule. Many years ago, individuals determined, that, since disease was more easily checked in childhood than later, and since children were more easily reached when gathered together in schools than in their homes, medical inspection of schools was a desirable institution. This at first had as its chief aim the control of contagion, but gradually assumed the broader field of elimination of physical defects.

As far back as 1837 France made provision for the safeguarding in a measure of school children's health. Unfortunately adequate financial support was withheld, and it was not until 1879 that sufficient funds were appropriated for the purpose. In 1884 the medical inspection service was reorganized on a plan that is being used to this day. Medical inspection is obligatory in both public and private schools.

In 1874 Brussels, Belgium, adopted a system of medical inspection, which was shortly after copied by Antwerp, Louvain, Liege and other cities. As Brussels developed its medical inspection system, dentists and oculists were added to the staff. Although Leipsig and Dresden instituted medical inspection in 1867, it was not systematized until 1889. In Wiesbaden the inspection was so thoroughly systematized that in 1898 the Wiesbaden plan was generally adopted throughout all Germany. In Switzerland medical inspection dates back to 1874;; in Sweden, 1878; in Hungary, 1887; in Roumania, 1899, in Moscow, Russia, 1895.

In 1870 England passed the Education Act, making school attendance compulsory and in 1891 attention began to be drawn to the necessity for medical supervision. Medical supervisors were appointed in various parts of the Kingdom but not until the Boer war drew attention to the deterioration of the class of men recruited for army service was any definite step taken. Then in 1907 an amendment was added to the Education Act making medical and dental inspection obligatory.

In our own country the first step in medical inspection was made in 1894 in Boston. Chicago in 1895 made a meager provision for inspection by appointing nine medical officers. New York in 1897 appointed one hundred thirty-four medical inspec-

tors for the schools. In 1898 Philadelphia adopted the plan and since then it has spread rapidly through the country. In all these cities this medical and dental inspection has originated with the medical and dental professions, and has been carried as humanitarian work until the municipality has adopted it.

In 1903 the State of New Jersey passed a permissive inspection law, and in 1904 Massachusetts passed mandatory legislation requiring each town and city to establish and maintain a system of medical inspection. So Massachusetts, having three hundred twenty-one towns and thirty-two cities, has medical inspection established throughout its territory. Outside of this state there are, as far as can be determined, about one hundred and fifty cities having the work under way in some form or another.

As the realization has become general that the inspection has other fields besides merely the detection and guarding against contagious diseases, attention has been turned to the physical defects found in children. Gulick and Ayres collaborating, with the support of the Sage Foundation, carried out a series of experiments during 1907 and 1908 and collected a mass of statistics that has proved invaluable. They found that full thirty-three per cent of the children in public schools belong to the class which has been designated as "retarded." They found that defective teeth, hypertrophied tonsils and adenoids were present in retarded children; they showed that defective teeth was by far the most common of all physical defects in school children, and they made a positive statement to the effect that but two decayed teeth would delay a child six months in the completion of the elementary school course. If that be true—and the standing of the investigators and the thoroughness of their investigations would seem to leave no chance for doubt—then here is a definite proof of the contention that it will be money saved by the community to remedy the evil.

Ebersole in his work in Cleveland, showed by the results of a series of psychological tests, added to school standing, that the children who underwent the experiments improved during the period at the astounding rate of 99.8 per cent. Experiments now under way in Chicago, New York and Rochester, will, it is expected, substantiate these statements, and when these claims have been corroborated it cannot be long until financing bodies recognize the advisability of carrying ont the work so well begun.

The need for dental inspection has been, as already shown, recognized in a measure. Brussels in 1875 began to include a special examination of the teeth with the medical inspection. At about the same time Strassburg adopted dental inspection and not long after Dr. Jessen instituted a school dental clinic which has been a model for other cities since. Cambridge was probably the first city in England to adopt dental inspection, since which time it has become general throughout that country. Other continental countries have also adopted it,—France, Sweden, Norway and Russia.

Rochester was probably the first American city to begin dental inspection and dispensary work. Since then the activity has spread until many cities, large and small, have taken it up. New York, through the children's Aid Society, has carried on a campaign of tooth saving. Cincinnati, Cleveland, Chicago and numerous smaller cities have made dental inspection part of the school hygiene work.

It is generally accepted that the oral hygiene movement resolves itself into three units:

1. Educational.
2. Inspection.
3. Clinical.

It is difficult to lay stress on any one of the three, but it would seem to be essential, if the tide of caries is not to overwhelm us, that much attention be paid to the educational unit.

We have with us, however, the results of these conditions, already existing, the extent and gravity of which we must discover and divulge by inspection and since medical inspectors without special knowledge of the teeth are admittedly unable to determine the extent of destruction, and required treatment, dental inspection by dental inspectors is necessary.

We find a vast number of cases where the family income cannot by any possible means take care of dental work. There are others where the parents are utterly indifferent to conditions existing. These are naturally dispensary cases; therefore, the clinical unit is important.

It can be seen that each one is essential to the success of the others, and that they form a circle of service that must be traveled in regular routine. The mile posts along the way have been few and far between. Little enough has been done even by those cities most advanced in this work to point the way to definite methods.

As was said before, however, this is to be in its ultimate working out a campaign of instruction, of prevention rather than cure, and so we attach the most importance to the educational unit of our work.

There are an infinite number of ways in which this can be carried on, of which the following are suggested:

1. Well written articles in magazines.
2. Well written articles in daily press.
3. Leaflets distributed in schools.
4. Chapters on oral hygiene incorporated in text books.
5. Talks before women's clubs.
6. Talks before mothers' clubs in schools.
7. Lectures in schools, illustrated by lantern slides.
8. Talks to children in school rooms.
9. Instructions in brushing and care of the teeth given in school rooms.
10. Instructions by teachers.

If we could take the children entering kindergarten, inspect and care for the deciduous teeth, and give adequate instruction, and prophylactic care for the permanent teeth as they erupt, we could in a great measure stop the advance of caries. This prophylactic care would include a careful drying of first permanent molars as soon as possible after they have erupted, and filling the fissures with oxyphosphate of zinc or copper mixed to a creamy consistency and forced to place by the ball of the finger pressing it into all interstices. Follow this with periodical cleansing with orange wood polisher and floss tape, assisted by adequate home care, and we may bring these children to maturity with a negligible number of cavities and a vast amount of comfort.

This may, of course, be an ideal that is at present beyond our reach,—a star to which we may hitch our wagon. But conditions present continually which call for alleviation and whose existence we cannot ignore; here are a large per cent defective and if left without care we will have lost first molars; undeveloped arches—crowded arches, inviting pyorrhea; inadequate nasal passages; and the vicious train of aching teeth, backward children, truancy, delinquency and criminality, one following the other. So we turn to the dispensary and inspection for relief.

There has been in Chicago, as in all other cities, the question

of a beginning. Given four hundred twenty-five thousand children with an unknown number already needing attention, and an annual influx of thousands with a negligible number following out any rules for oral cleanliness;—what should be done first?

We had to do first what came to our hands. We offered to equip and conduct a dispensary and asked permission to carry on an inspection, and though we had all desired aid from the educational authorities, it was not until six months afterward that official connection was had with the Department of Health. Our volunteer force, small in comparison with the number of dentists in Chicago, but large in enthusiasm and capacity for work, has up to date examined thirty-three thousand three hundred eighty-one children. Of these thirty thousand forty-four were suffering from carious teeth and fifteen hundred nine showed diseased oral conditions needing attention. This is a percentage of ninety-five out of one hundred defective, and coincides with the findings elsewhere, showing how vast is the task that confronts us.

In our dispensary and inspection work the first step has been to eliminate those children not dispensary cases and gain parents' consent for those that are. This has been done by the examination chart, which calls attention to defects in the mouths of children of well-to-do parents, which may, through inattention on the part of parents, or concealment on the part of children because of fear of the dentist, have existed unheralded; and the children of poor parentage where lack of knowledge is accountable for the conditions persisting. Without the backing of a mandatory law it would be folly to carry out only dispensary treatment without the written consent of parents. This is given in the request for services, filled in on back of chart, so the inspection must necessarily precede the dispensary.

We have found the simplest method of inspection to be as follows: the blanks having previously been filled out by the teacher with name, age, school, grade, and nationality are brought, pads intact, to the inspector, the children appearing in the order in which their names are written.

The inspector sits in a chair, back to window, so that the child's face is in the light. The teeth are examined with mirror and explored without the fingers being inserted in the mouth, the child standing between the knees of the inspector. The chart

being filled out with cavities marked, conditions indicated and other designations made, the three charts, marked in triplicate by the use of carbons, are torn off, the blue slip, No. 3 presented to the child to be taken home, and the others preserved for record. Clean instruments are taken and another child presents. Instruments are cleansed by being scrubbed in hot soapy water, sterilized in absolute alcohol and left standing in hot water until used.

The various designations of conditions are these:

Location of cavity and extent indicated as nearly as possible by outlining definitely.

If in the judgment of the inspector, a tooth pulp is endangered or putrescent but susceptible to treatment, age of patient and progress of calcification considered, it is marked as a salvable root.

If in the inspector's judgment root is unsalvable, need for extraction is indicated.

If tooth is missing or unerupted, indication is made.

If abscess with fistula is present, indication is made.

Besides these, general conditions are designated, the presence of palatal defect, malocclusion, irregularity, extent and classification of irregularity, and such conditions as atrophy, Hutchinson's teeth, serious need for prophylaxis, are indicated under "Remarks." Often valuable hints as to tonsillar conditions, or the presence and extent of adenoids, may be given the medical inspector by the dentist. The dental inspector makes a daily report of ground covered and conditions found.

In our second unit of work,—that in the dispensaries, it has been necessary to outline a routine series of treatments. Dr. Buckley's formulas, embracing the entire field of treatment were adopted as a standard, and with these and the indications on the dispensary record cards it has been possible, when necessary, to carry one child through the hands of two or three operators without any difficulty or entanglement regarding treatment.

Plastic fillings are inserted, amalgam wherever possible, and oxyphosphate of zinc or copper where indicated. Salvable roots have been filled, loose deciduous roots quickly extracted and extraction of permanent molar roots, unsalvable, or deciduous roots, the removal of which might be painful, deferred, until the monthly extraction clinic, when nitrous-oxide gas is administered.

The school nurse is present at the dental clinic and assists the dentists as well as keeps the records of cases. It is possible for her to carry on her routine work in the school at the same time. A daily report of dispensary activities is also made.

When first permanent molar roots are found unsalvable we have considered immediate extraction the best mode of procedure, feeling that it is far better to allow the second molar to usurp its place than to retain the space. In the case of deciduous molar roots, salvable, in order to retain their space in the arch it has been the usual procedure to grind flat to the gum line and fill the roots.

At present a large order of dentifrice and tooth brushes is on the way, these to be dispensed at cost to children unable to procure others.

The United Charities of Chicago have adopted as the standard of self-support an income of two dollars or more per week per member of the family. We have adopted this as our standard, and with the exception of children whose parents are absolutely indifferent to advice, this is followed out. It is hoped that eventually all cases applying for dispensary services, either medical, or dental, may be investigated by the Charities organization, and steps are being taken in that direction.

At present we have in operation three dispensaries. Try as we may it has been impossible to provide continuous service with a volunteer force. We have had in mind the prospect of sufficient financial backing to provide a paid dispensary force, and now our desires are on the eve of realization. A prominent business man of Chicago, noted for his philanthropies, has offered to finance, not three, but ten dispensaries, until such a time as the municipality will be ready to take charge of them. With the enormous waiting list at each dispensary, this will aid greatly in accomplishment, although our plan, as we have worked it out in our city, contemplates the establishment eventually of fifty school dispensaries each one of which would serve an average of five public schools and two parochial schools.

There should also be fifty dental inspectors, with an average of five schools each, of which one could be visited one school day of each week.

The central dispensary of infirmary would not work out as well in Chicago as in smaller cities, because of the distances to be trav-

eled. In time there may be, as has been suggested, a dental room in each school building, and we are content to be working toward that end. We have tried to make each step count and to be sure of permanent basis before making any advances.

The third unit of educational work is in its infancy. We have taken advantage of opportunities, like that of the Child Welfare Exhibit, and the City Welfare Exhibits which are an echo of that, to advance the cause of oral hygiene. Some lectures have been given in schools, which have been well attended, and some instructions in class rooms.

An adequate series of slides is now in preparation, with which it is aimed to show the progress of dentition, the necessity for attention to deciduous and permanent teeth alike, the disastrous results of too early loss of deciduous teeth and the malformations following loss of first molars, the progress of caries and its sequelae, and to dwell on the various resulting conditions from neglected oral health, such as caries or necrosis of the bones, pernicious anaemia following continued ingestion of pus from discharging chronic abscesses, or the probability of tubercular infection penetrating to the lymphatic system from such chronic abscesses. There are vast possibilities for educational work here and we hope to be able to make it comprehensive and yet comprehensible.

The charts in use in various cities, especially those devised by Dr. Doherty, of Toronto, and in use in the Toronto schools, are instructive and valuable. A set of these is displayed before you.

New York, as before mentioned, has a series of experiments in progress, designed to show the value of hygienic oral conditions; Rochester is working out a similar experimental series, and in Chicago, without any effort at coincidence, a like work has been instituted. Dr. McMillan, director of the Child Study Laboratory, is intensely interested and we are assured of his hearty co-operation. The results of these various efforts will be looked forward to with interest, as substantiating and adding to the statistics already compiled by Gulick and Ayres.

Tabulating various school charts has brought to light some interesting facts. Unfortunately, lack of funds has hampered your essayist to a very serious extent and many points he had hoped to bring to light he has not been able to get at. This tabulation it is hoped will be completed and extended for it is possible in this way

to obtain some very valuable statistical information. This much can be said,—that caries of the teeth is essentially a children's disease and its ravages are greatest just at the time when a growing child needs all its vitality. Toward the end of the school age the presence of caries is found in part to have been eliminated, in a great many cases unfortunately by the extraction or exfoliation of teeth which should never have been lost. The permanent effects, be they what they may, cannot entirely be eliminated, and are frequently operative through later life. The following tables were compiled with reference only to the condition of the first permanent molars, the keystone of the dental arch. Tabulations completed to date give us the following data:

Grade I.—Average age of entrance, 6 years. No. tabulated, 1733.

Age	6	7	8	9	10	11	12	13	14
1 molar cavity	89	67	22	6	3	..	..	..	1
2 molar cavities	130	97	28	8	4	..	1	..	1
3 molar cavities	38	33	21	4	5	4	..	..	..
4 molar cavities	66	84	34	12	2	..	2	3	4
1 unsalvable molar	27	6	5	..	..	..	..	..	..
2 unsalvable molars	28	14	3	..	..	..	..	..	..
3 or more	30	11	4	..	..	..	..	..	..
No. molar cavities	533	256	42	10	11	..	..	..	..

Total with molar defects, 881. Total with no molar defects, 852.

Grade II.—Average entrance age, 7 years. No. tabulated, 1,183.

Age	7	8	9	10	11	12	13	14	15
1 molar cavity	88	84	20	6	4	1	1	..	..
2 molar cavities	89	89	27	7	7	1	1	..	..
3 molar cavities	46	50	23	5	4	1	1	..	1
4 molar cavities	97	96	25	9	2	2	4	1	..
1 unsalvable molar	6	5	2	..	..	..	..	..	..
2 unsalvable molars	15	11	4	1	..	..	..	..	..
3 or more molars	25	32	8	3	..	..	..	..	..
No. molar cavities	166	100	46	14	11	..	..	..	..

Total with molar defects, 904. Total with no molar defects, 279.

Grade III.—Average entrance age, 8 years. No. tabulated, 1,458.

Age	8	9	10	11	12	13	14	15	16
1 molar cavity	74	59	33	15	12	1	..	..	..
2 molar cavities	88	92	59	20	8	7	1	1	1
3 molar cavities	69	75	29	10	8	5	2	..	..

4 molar cavities	122	121	58	23	11	2	..	..	..
1 unsalvable molar	14	24	17	10	8	..	..	1	..
2 unsalvable molars	20	41	13	8	6	..	..	1	..
3 or more	22	38	27	9	3	2	..	..	..
No. molar cavities.....	107	74	32	17	5	3	1	2	..

Total with molar defects, 1,250. Total with no molar defects, 208.

Grade IV.—Average entrance age, 9 years. No. tabulated, 1,034.

Age	9	10	11	12	13	14	15	16	17
1 molar cavity	44	46	38	13	19	1	..	..	..
2 molar cavities	54	82	44	24	9	1	1	..	..
3 molar cavities	44	39	36	17	9	1	..	..	..
4 molar cavities	53	54	47	27	13	3	1	..	..
1 unsalvable molar	9	32	11	10	6	1	1	..	..
2 unsalvable molars	16	19	12	8	2	1	..	..	..
3 or more molars.....	14	10	8	1	3	..	..	..	..
No. molar cavities.....	82	58	36	13	5	2	1	..	..

Total with molar defects, 836. Total with no molar defects, 198.

Grade V.—Average entrance age, 10 years. No. tabulated, 1,197.

Age	10	11	12	13	14	15	16	17	18
1 molar cavity	53	57	47	34	13	1	..	..	..
2 molar civities	83	82	45	23	10	2	1	..	..
3 molar cavities	55	52	45	24	12	1	1	..	..
4 molar cavities	54	48	39	33	15	—	1	..	..
1 unsalvable molar	32	46	37	16	13	1	..	..	..
2 unsalvable molars	31	23	20	14	7	1	..	..	..
3 or more molars.....	19	13	18	5	2	..	..	..	..
No. molar cavities.....	68	46	34	14	6	1	..	..	..

Total with molar defects, 1,028. Total with no molar defects, 169.

Grade VI.—Average entrance age, 11 years. No. tabulated, 1,133.

Age	11	12	13	14	15	16	17	18	19
1 molar cavity	48	66	43	19	4	2	..	..	..
2 molar cavities	62	55	31	10	1	..	..	..	..
3 molar cavities	45	51	15	3	1	..	..	..	..
4 molar cavities	70	50	44	9	3	..	..	..	..
1 unsalvable molar	39	37	31	12	6	2	..	..	..
2 unsalvable molars	16	21	18	12	2	..	..	..	..
3 or more molars.....	23	25	23	10	1	..	..	..	..
No. molar cavities.....	54	38	36	10	5	..	..	..	..

Total with molar defects, 988. Total with no molar defects, 145.

Grade VII.—Average entrance age, 12 years. No. tabulated, 777.

Age	12	13	14	15	16	17	18	19	20
1 molar cavity	45	49	38	9	2	..	..	..	..
2 molar cavities	51	54	38	18	..	..	..	..	..
3 molar cavities	32	37	28	8	1	..	..	..	..
4 molar cavities	52	83	54	2	2	1	..	..	..
1 unsalvable molar	26	38	18	12	..	..	..	..	..
2 unsalvable molars	25	26	21	5	1	..	..	..	..
3 or more molars.....	28	30	24	4	1	..	..	..	..
No. molar cavities.....	44	35	31	7	2	..	..	..	..

Total with molar defects, 658. Total with no molar defects, 119.

Grade VIII.—Average entrance age, 13 years. No. tabulated, 811.

Age	13	14	15	16	17	18	19	20	21
1 molar cavity	52	41	32	6	1	..	1	..	..
2 molar cavities	60	60	29	12	4	..	..	..	..
3 molar cavities	42	48	19	9	..	..	..	..	..
4 molar cavities	72	94	73	15	3	1	..	..	..
1 unsalvable molar	33	46	22	8	1	..	1	..	..
2 unsalvable molars	17	27	17	6	2	1	..	..	..
3 or more molars.....	6	14	6	1	..	..	..	..	..
No. molar cavities.....	45	48	7	4	1	..	..	..	..

Total with molar cavities, 706. Total with no molar cavities, 105.

This is an interesting exposition of the progress of destruction in the first permanent molar, as it is also of the retardation situation. In Chicago forty-eight per cent of the funds raised by public taxation is devoted to educational purposes. If the problem of retardation could be eliminated, an item of three hundred thousand dollars could be saved, for that is what repeaters cost us last year. Every city has a similar item. Ayres computes Chicago's loss in this manner at over two million dollars, but it is not admitted by authorities.

A minor problem productive of a large amount of expense is that of school ventilation, and there is no reason to doubt that much of the difficulty experienced in providing fresh sweet air in school rooms is due to the fact that accompanying the consumption of oxygen, and the exhalation of carbon dioxide, is the throwing out of the odors and pathogenic by-products of carious teeth and insanitary mouth tissues.

No doubt exists as to the retention and multiplication of micro-organisms in and around decaying teeth. Conditions are ideal and

bacteriological cultures have shown this to be a fact. Let us read over the diseases enumerated by Hogarth as the "Common diseases of school life," and see how many of them may be in a measure or in entirety traced to oral conditions.

1. GENERAL DISEASES.

1. Malnutrition :

Causes—Improper feeding, bad housing, gastro-intestinal disorders, nervous diseases, acute infections.

Results—Anaemia, stunted growth, delayed mental and physical development.

2. Rickets :

Causes—Unhygienic surroundings especially insufficient or improper feeding.

Results—Impaired physique, delayed mental and physical development, predisposition to bronchial catarrh and tuberculosis.

3. Rheumatism.

Causes—Probably the entrance of specific germs into the body through tonsils, or elsewhere.

Results—Abnormalities of nervous system and nutrition, frequent attacks of tonsilitis, eruptions, joint affections, brain affections—chorea, epilepsy, heart disease.

4. Tuberculosis :

Cause—Entrance of tubercle bacillus into the body affecting any organ—glands, lungs, joints; healthy, normally developed children are seldom affected.

Results—Chronic invalidism, impaired physique, deformity of bones, chest and joints, permanent crippling. Complete recovery is only had after persistent treatment which occasions prolonged absence from school and great educational loss to the child.

5. Nervous diseases of Childhood, including (a) Neurasthenia; (b) Chorea; (c) Epilepsy :

Causes—Hereditary predisposition, injudicious up-bringing, malnutrition, rheumatic predisposition.

Results—Physical and mental helplessness and inefficiency, hysteria, chronic invalidism.

SYMPTOMATIC OR LOCAL DISEASES.

1. Anaemia:

Causes—Malnutrition and general debility aggravated by bad housing and improper food, digestive disturbances.

2. Headaches:

Causes—Overheated or inadequately ventilated rooms, anaemia, decayed teeth, digestive disturbance.

3. Sore Throat:

Causes—Mouth breathers are especially susceptible. Sore throat is divided for convenience into two kinds:

(a) Severe, due to diphtheria, scarlet fever, follicular tonsilitis, influenza, acute pharyngitis or laryngitis.

(b) Slight, due to diphtheria, scarlet fever, tonsilitis, influenza, nasal catarrh and adenoids, rheumatism.

4. Mouth Breathing:

Causes—Habit, adenoids, deviated septum.

5. Adenoids:

Causes—Abnormal growth of lymphoid tissue in naso-pharyngeal space.

6. Enlarged Tonsils:

Causes—Chronic inflammation, rheumatic predisposition, defective teeth, septic mouth conditions with enlarged submaxillary and cervical glands.

7. Enlarged Glands:

Causes—General infection, anaemia, malnutrition, tuberculosis, decayed teeth.

8. Decayed Teeth, which need no elaboration.

Fifty-eight varieties of harmful bacteria have been found in one mouth where they found encouragement in unclean conditions. Hartzell has traced twenty-six cases of arthritis deformis directly to septic oral conditions and has achieved remedial results on removal of this cause. Hunter of London, who has so uncompromisingly condemned "American Dentistry," so-called, finds in these diseased oral conditions a prolific cause of rheumatism, general sepsis, and malnutrition. Evans, recognized as an authority on health considers pyorrhea and other unhygienic mouth conditions an enormous factor in the causation of deforming arthritis. Bacteri-

ORIGINAL COMMUNICATIONS.

ological investigations by Cook, Moorehead, and others, have caused it to be generally accepted as a fact that tubercle bacilli find access to the lymphatic system through abscessing teeth. The theory has been advanced, although it has not yet been substantiated, that adenoids as well as hypertrophied condition of the tonsils may both be attributed to decayed teeth and oral sepsis. If this be true, and in my own mind the coincidence of occurrence of these conditions leaves little room for doubt, then it may easily be seen that once this vicious chain is established these conditions will persist until a link is broken,—that link the unhygienic mouth conditions. For you have seen in how many of these diseases of childhood either rheumatism, infection or malnutrition is a factor, and if all of these can in many cases be definitely attributed to mouth conditions, we have here a situation that demands attention, for even he who runs can read. If the old maxim, "An ounce of prevention is worth a pound of cure," is true; if our children, whom we compel to attend school during a certain period of years, are not to be sacrificed to contagious, infectious, or insidious disease; if the children are to derive full benefit from the elementary school course, which has been set in compulsory-educational laws as the lowest standard of education essential; if we in a word, are to put into practice, civic, state and national economy in its fullest sense, then we must have adequate medical and dental inspection, backed by reasoning and far-seeing administrative expenditures. We must discover these chronic conditions of childhood as well as contagious disease, and when on account of incapacity, poverty, vice, or ignorance on the parents' part, no remedial steps are taken, municipal treatment must be accorded.

Then, and then only, will we progress toward a higher standard of mental and physical development.

REPORT OF THE CLINIC COMMITTEE.

DR. J. L. HOOVER, SHELBYVILLE, SUPERVISOR.

DR. J. P. SMITH, CHICAGO, ASSISTANT.

The Clinic Committee reports that of the 125 clinics announced in the program 69 were given, 29 were excused. Some of them could not give clinics because there was no gas in the clinic room. For several of them no suitable patients could be obtained, others were excused for sickness and various reasons. The other 27 were not present. I am informed that Springfield is building a large convention hall and that in the future we will have all the accommodations needed. Dr. Whalen's suggestion in his clinic report of 1906 regarding purchase of second-hand chairs for convention use only I think a good one, and call attention to it hoping some action will be taken.

WEDNESDAY MORNING.

1. DR. T. W. BROPHY, Chicago. Surgical Clinic. Excused.
2. DR. FREDERICK B. MOOREHEAD, Chicago. Two Surgical Clinics.

(a) The first patient, a girl of five, is suffering from a congenital hare-lip and cleft-palate. The lip was repaired in infancy, but unfortunately no attempt was made to close the hard palate. The little patient now has a wide cleft extending through both hard and soft palates, with insufficient soft tissue to effect a closure, especially in the anterior half of the hard palate. Our only hope in this class of cases is to make a muco-periosteal flap from the vomer, bringing it down and suturing to the opposite side. The steps in the operation are as follows:

The usual muco-periosteal flaps are made, after the method of Langenbeck. On the right side the flap is made to include the mucosa and periosteum of the vomer from the junction of the anterior with the middle third of the hard palate, forward to the ridge. This flap is brought down and sutured with a mattress suture to the muco-periosteal flap of the opposite side. In this way we are able to completely close the cleft in the hard palate. The mattress suture is continued back to the uvula, closing the entire palate. Lead plates are seldom used, or necessary, when the mattress suture

is employed. While the case is unfavorable, because of the extreme width of the cleft, we can hope for a fairly good result.

(b) The second case is one of great interest to the general practitioner. The patient is an unusually large fleshy woman, 45 years of age. This is what has happened in her mouth: She has a low grade infection in the lower right second bicuspid. The irritation produced in the periapical tissues caused a multiplication of the fixed connective tissue cells which resulted in the formation of a limiting wall of connective tissue. Some epithelial cells from embryonic remains, or tooth germs, were accidentally incorporated in this limiting membrane. These cells multiplied until the sac was completely lined. The secretion caused a distension of the sac and this in time caused a pressure atrophy of the surrounding hard tissues. At present the cyst extends from the second bicuspid forward to the median line, involving nearly the entire bone between the two points mentioned. With the patient under ether, an incision is made, laying the sac wide open. Next, the sac is very carefully dissected out. If any portion is left, the case will not get well. The cavity is swabbed with tincture of iodine, and packed with iodoform gauze, sutured with comp. tinct. benzoin. The packing will be removed in 48 hours, and the cavity filled with bismuth paste, which will be renewed from time to time, until the cavity is obliterated.

3. DR. THOMAS L. GILMER, Chicago. Surgical Clinic.

A case of double cleft palate, which was successfully performed.

CHAIR CLINICS.

4. DR. W. M. OLSON, Galesburg. Gold filling, using Watt's crystal gold, strip form, hand pressure, finishing with hand mallet.

5. DR. S. G. ABBOTT, Rock Island. Solila gold filling with cement lining in place of inlay.

Prepare cavity with perpendicular walls, apply rubber dam; mix Ames' Cement with "C" Liquid Brown Powder, the consistency you would use for setting a crown, putting just enough in cavity to cover seat. Place a piece of Solila Gold as large as will go into cavity, gently tapping it down in place until cement appears at margins; let stand until cement sets, removing any surplus cement; proceed as with any Solila filling. When cavity is filled remove dam and let patient close teeth to get articulation by cutting off with burrs where needed. By using matrix band the same method is applicable to proximal cavities.

6. DR. JAMES J. MOUNT, Chicago. Extention for prevention in cast-gold inlay. Gave clinic but sent no report.

7. DR. HENRY L. WHIPPLE, Quincy. Cast inlay.

A cast filling of a combination of metals with aluminum, which makes a very hard, non-oxidizing, non-shrinking filling.

The margins are as perfect as those of gold, the cost is materially less for those not able to pay for a more expensive filling, and the service is equally good.

It is the only cheap metal with the above good points that can be melted by the nitrous oxide flame without burning.

I showed one filling that had been in the mouth two months and placed another, which when finished looked no better than the first.

8. DR. L. R. SNOWDEN, Peoria. Restoration of lower first molar with amalgam.

My clinic was just a plain ordinary amalgam filling.

I restored an entire lower left first molar with amalgalam without post or matrix. The case was ideal and is usually crowned and many times extracted. I have had successful experience with these cases.

9. DR. L. O. GREEN, Chicago. Extracting, local anesthetic. Excused.

10. DR. GOODMAN A. MILLER, Chicago. Pyorrhea and prophylaxis, using Carr instruments, exhibition of tooth brushes, and other accessories for patients to maintain the condition which you produce.

My clinic at the Springfield meeting was patient having teeth in advanced stage of pyorrhea, much recession of gums, inflammation and pus present, teeth loose, with deep pockets.

Treatment: Three hours spent on five lower front teeth, thorough removal of deposits, planing all surfaces involved, including cementum and enamel, using Carr planers, thorough polishing of all surfaces, using strips well vaselined phophylactic silk tape well vaselined and carrying flour of pumice, finishing with oxide of tin on orange wood points in hand port polisher. Teeth being very loose, made splint of 26-gauge soft brass wire, passing a loop around left lower cuspid to right lower lateral loosely, putting in individual loops between teeth and around both of the loop wires from lingual to lobial, tightening these first by twisting, finally twisting both ends of the loop wire at the right lower lateral. To obtain best results prophylaxis must be maintained.

11. DR. ALFRED W. HALL, Chicago. Gave no clinic. Did not report.

12. DR. E. A. SCHMUCK, Chicago. Prophylaxis as a necessary factor in general practice. Gave clinic but sent no report.

13. DR. GEORGE W. SCHWARTZ, Chicago. Bicuspid jacket crown, porcelain or platinum jacket.

The tooth was ground down to one-third its original length, then stripped of its remaining enamel, then the buccal surface was ground on a slant and concave to the center of the tooth mesially and distally to just below the free margin of the gum. This finished the preparation to receive the jacket.

The jacket was made by soldering a lapped piece of 30-gauge platinum to make a rather long tube to fit the tooth, the buccal surface of which was cut in narrow strips as far as the free margin of the gum and following it around to the mesial and distal center of the tooth, then the strips were turned in to fit the contour of the prepared tooth and stiffened with platinum solder, the lingual portion was trimmed to the right length, and S. S. W. Facing was selected and soldered to the mesial and distal corners of the jacket. It was then filled in with White's 2.100 porcelain body. The finished crown was ready to exhibit in two hours and forty-five minutes from the time of seating the patient, showing its practicability in a busy practice at reasonable prices.

14. DR. H. I. VAN TUYL, Chicago. Compound comminuted multiple fracture of lower jaw.

The writer wishes to report the case of a boy, 9 years of age, who fell from the roof of the house to the ground, a distance of 38 feet. The patient struck on a stairway leading to the basement, his chin receiving the greater force of the blow. There were no internal injuries and when the lad was picked up a few minutes afterward he was not unconscious. There were four complete fractures of the mandible. Two on the right side; one just distal of the cuspid, and one to the mesial of the first molar; two on the left side; one between the cuspid and the lateral, and the other mesial of the molar. The right anterior fracture was comminuted, which necessitated the removal of several pieces of bone and two bicuspid teeth. The four upper incisors and left cuspid were lost. The right central was driven to the full length of its crown into alveolar process, splitting out the labial plate. Externally there was a deep cut underneath

the chin about one and three-quarters inches in length which required five stitches. The mucous membrane of the floor of the mouth under the tip of the tongue was torn and five catgut sutures were inserted.

THE TREATMENT.

Briefly stated, the treatment consisted in applying a vulcanite interdental splint after the swelling had subsided, to fit the remaining teeth of both upper and lower jaws. The fragments of the lower jaw were held in the splint by means of a silver wire passed under each fragment of bone and twisted over the top of the splint. (Dr. G. V. Black's method.) The proper relation of the lower to the upper jaw was maintained by means of a plaster paris boot underneath the chin held in place with a modified Barton Bandage.

15. DR. J. T. WATTERS, Potomac. Ascher's artificial enamel filling. Gave clinic but sent no report.

TABLE CLINICS.

16. DR. F. B. OLWIN, Robinson. Gave no clinic; did not report.

17. DR. F. H. MCINTOSH, Bloomington. A crown, using Ludwig's anchor with porcelain cast on same. Gave clinic, but sent no report.

18. DR. R. W. BECKER, Chicago. Gave no clinic; did not report.

19. DR. PAUL M. BREYER, Freeport. Gave no clinic; did not report.

20. DR. L. T. LUNDY, Edinburg. Seamless gold crown. Gave the clinic, but sent no report.

21. DR. JOHN H. CADMUS, Chicago. Did not give clinic; did not report.

22. DR. S. P. BOWER, Taylorville. A quick method of carving cusp for shell crown.

Fit band to root. For the wax impression I use paraffin and plaster. Melt the paraffin in a tin lid, then stir in plaster to a creamy consistency; when cool this makes an ideal material. Place a piece large enough to cover top of band and have patient bite into it and move the jaw around as in masticating; remove band and impression together and fill the remainder of crown with beeswax. Then carve to outside edge of band. This material carves nicely and can be added to if you carve off too much. After carving to

proper shape press cusps into mouldine just far enough to cover edge of band, then pour with Mellotte's metal. I use two rings, one to hold the mouldine and one that just fits inside of it to pour the mellotte's metal in, swedge with hammer and pine stick and your cusps will fit band without any trouble.

23. DR. T. H. DALY. Normal. Cast crown used with Steele facing. Gave no clinic; did not report.

24. DR. T. L. GRISAMORE, Chicago. Something in orthodontia. Excused.

25. DR. JOHN A. HEATON, Hoopeston. Clinic to be announced. Gave no clinic; did not report.

26. DR. RALPH T. HUFF, Chicago. Orthodontia. Cancelled.

27. DR. EDWARD T. EVANS, Decatur. A special matrix for large amalgam restorations.

Using copper of about 36 or 38 gauge, making a band quite a little larger than the binding wire measure. To make soldering of this band easy, snip one end of it slightly and place the other end in this cut and press together with pliers. This will hold the band, making a lap joint while soldering. Now take the band to the tooth and place in position and with pliers pinch it tightly around the tooth, in much the same way that bands are fitted in orthodontia work. Remove from tooth and fold this surplus portion down flat against the band. Now use as ordinary band. When you wish to remove it unfold the side that was folded down and it can be easily removed without cutting.

Another: Take a strip of thin copper about three inches long and fold one end over and over about three times, then bend fold back at its center, making a "T." This may be drawn between the tooth to be filled and the next, brought around the tooth and held either by putting the end between two other teeth or held with the fingers while filling is packed in. Matrix is easily removed.

Celluloid matrix: Remove coating from "Kodak" film by placing same in hot water, which will leave the celluloid clear. Take binding wire measure of tooth. Cut a strip of celluloid the width you wish and with rubber dam punch make holes the distance apart corresponding with the measure. Now cut from top of band to hole in left end, and from bottom of band to hole in right end and lock the ends together in these cuts. To prevent this band from spreading as soon as pressure is made on it, fuse the joint together by

squeezing it in a pair of small serrated flat nose pliers that have been heated hot enough to melt the celluloid.

28. DR. L. L. FUNK, Chicago. Treating tortuous canals, pyorrhea pockets, fistulæ, with the apex treating broach, also absolute prevention of pyorrhea by use of bridge work and pyorrhea toothbrush.

The Apex treating broach has a "V" shaped notch in the end of it to insure carrying a minute quantity of treating cotton to the apical foramen. There are two kinds, smooth and serrated, smooth for packing root canals and pyorrhea pockets, serrated for wiping or swabbing out same.

The Sanitary Universal tooth brush consists of a tubular nickel reverse penholder with a notched aluminum tube fixed in the small separable end. A twisted wire brush of small diameter is inserted in the aluminum tube and adjusted in any angle or curve suited to cleaning the teeth, special adjustment for bridge work. When through using brush should be drawn out and used portion cut squarely off with scissors, leaving a fresh end ready for use.

29. DR. J. H. PROTHERO, Chicago. Anatomical occlusion. Gave the clinic but sent no report.

30. DR. J. K. CONROY, Belleville. Various steps of amalgam fillings with cement linings. Excused.

31. DR. A. J. HARPER, Gardner. How to check the wear on badly worn teeth by using the gold inlay. Gave the clinic but sent no report.

32. DR. W. B. TYMN, Charleston. Gold inlays with model.

The clinic was a demonstration of three methods of cavity preparations and inlays to fit.

First. Inlay for bridge abutment. This inlay was placed in a cavity in an upper cuspid which had been devitalized. The mesial and distal were cut down to the gingival, as was the lingual, leaving a step about the middle of the tooth, gingivoincisor, carrying the cavity well to the incisal or cusp. The root canal was enlarged and a 14 gauge clasp metal wire used for the post, making a very rigid abutment for the anchorage of a bridge.

Second. Cavities in both approximal surfaces of an upper lateral, the bite not being close there is but little strain upon the incisal of the tooth. Cut the approximals away to the incisal and

unite the cavities at the gingival, squaring the base of the cavity, also leaving as much of the enamel on the labial as is possible.

Third. Broken or abraded incisors. Instead of devitalizing and using a post the cavity was prepared by counter sinking in the dentine on the incisal and cutting a groove down the lingual to the gingival pit and making a pit under the lingual lobe of the tooth. This groove should be squared and about one-third the width of the tooth and just through the enamel.

33. DR. W. J. WORSLEY, Dixon. The use of Alexander's plastic inlay gold crowns and fillings. Gave no clinic; did not report.

34. DR. E. S. HODGSON, East St. Louis. Inlay swing bridge, replacing upper first bicuspid; inlay abutments on vital teeth. Gave the clinic but sent no report.

35. DR. LOUIS E. BAKE, Chicago. Cast abutments for bridges with detached pins. Excused.

36. DR. LOUIS DAYAN, Chicago. Three stages in continuous gum for full dentures. Gave the clinic but sent no report.

37. DR. EMIL A. ANDERSON, Chicago. Split-post attachment for removal of bridge work. Gave no clinic; did not report.

38. DR. A. E. SCHNEIDER, Chicago. Porcelain veneers. The only two prophylactic crowns in dentistry today.

First. The building and coloring of a porcelain jacket crown in one bake complete; showing the correct preparation of all teeth for the insertion of jacket crowns; to insure adequate strength for all practical purposes.

Second. The dowel crown made with an especially prepared procedure for inset cast band and base. The root end is prepared with inset shoulder as for jacket crowns.

Indirect method employed using amalgam model with plaster bite or model of prepared tooth and its approximating teeth. This new method seemed to create quite a favorable impression among discriminating dentists because of the possibility now to make thoroughly prophylactic dowel crowns and bridge abutments.

39. DR. R. M. LINDSAY, Alton. Gave no clinic; did not report.

40. DR. HORACE THARP, Chicago. Post for lateral incisor porcelain crown. Gave the clinic but sent no report.

41. DR. J. E. JACOBS, Chicago. (a) An ideal form of cavity preparation applicable to certain cases of cast incisal angle restora-

tions; (b) root preparation and construction of base for cast-base crown. Gave the clinic but sent no report.

42. DR. A. C. BARR, Alton. Gave no clinic; did not report.

43. DR. E. L. KERN, Chicago. A coping with countersunk band either swaged or cast.

The cardinal points in this method are:

First. A band of this type avoids all irritation if the gingival margins.

Second. It causes no absorption, consequently no display of metal.

Third. It makes a more rigid attachment than an annular band of the Richmond type.

Fourth. It affords more protection than a band which entirely or partly surrounds the root.

Fifth. In cases where a cast coping is used it requires much less of the operator's time, and causes no pain to the patient.

Sixth. A countersunk band has the effect of a pin; consequently it is not necessary to use a large pin. Large pins require enlarged root canals, which means sacrifice of root substance.

44. DR. G. M. COVELL, Hamilton. Restoration of root and crown of tooth by the cast method. Gave no clinic; did not report.

45. DR. H. E. PHILLIPS, Chicago. Sweating bands and other good stunts. Excused; no gas in the building.

46. DR. EDWARD C. HOFFMAN, Plainfield. Cast reinforcements applied to denture made for a protruding superior maxillary ridge. Gave the clinic but sent no report.

47. DR. G. B. HUMFREVILLE, Kewanee. Little things. Gave the clinic but sent no report.

48. DR. HARRY F. LOTZ, Joliet. Free dental school inspection.

Newspaper clippings and correspondence, bound; relating to school inspection in Joliet.

Set of 25 display cards, 22x28 inches, "Mouth Hygiene Exhibit," prepared by Dr. W. H. Doherty of the Department of Medical Inspection, Board of Education, Toronto, Canada.

49. DR. R. E. COCKERELL, Alton. Gave no clinic; did not report.

50. DR. J. O. BALDWIN, Springfield. Exhibit of malocclusion. Gave the clinic but sent no report.

51. DR. E. W. ELLIOTT, Chicago. Clinical dental medicine. Excused.

52. DR. E. F. HAZELL, Springfield. The uses of the Gilmore clasp as applied to plate and crown work. Gave the clinic but sent no report.

53. DR. A. B. LEE, Pontiac. Demonstration of local anesthetic. Gave no clinic; did not report.

54. DR. B. M. SMITH, Springfield. Casting copper and tin for large restorations instead of amalgam. Gave the clinic but sent no report.

55. DR. GEORGE D. SITHERWOOD, Bloomington. Making amalgam dies, reproducing cavity for gold or porcelain inlays.

An impression of the prepared cavity was taken with stick impression material and cut off in a small piece. A small amount of plaster paris was then mixed and built up in a little heap. Into this the impression was pushed with the mould uppermost, making a little wall around it. When the plaster was hard and trimmed it made a small cup. Into this a sufficient amount of amalgam mixed soft was then carefully packed. When the amalgam became hard the plaster and impression were removed, leaving a very fine die from which the inlay could be formed either by making wax model for gold or burnishing a platinum matrix for porcelain.

56. DR. JAMES R. WELCH, Peoria. Treatment of apical pericementitis by opening into the apical space through the outer wall of the alveolus. (Using skull to illustrate.) Gave the clinic but sent no report.

57. DR. FREDERICK H. BOWMAN, Springfield. Method of removing broken broach. Gave clinic but sent no report.

58. DR. J. W. CRIGLER, Normal. Method of making amalgam fillings adjoining gold with no bad results. Gave the clinic but sent no report.

59. DR. EDGAR D. COOLIDGE, Chicago. Cavity preparation for gold inlays.

60. DR. F. M. CONKEY, Homer. The new use for the old broach.

This clinic must be seen to appreciate and properly understand its full purpose.

It is a method of placing a series of serrations on an old

broach to hold cotton for drying root canals, treating sinuses and pus pockets.

The appliance consists of a cast cylinder base two inches in height with an opening cut on one side at the base line where a serrated surface is placed and held in position by two screws. Into this cast base is fitted a piece of shaft steel one inch in diameter, with a spring which keeps the shaft from resting upon the serrated surface. An old broach which has had its barbs dulled until it is of no more use is cut off back of the barbs, leaving a perfectly smooth surface. It is then laid on the serrated surface and the shaft taped with the hand, which produces a series of serrations on one side of the smooth broach to hold the cotton, wrapping on the broach by rotating it one way only, because if you wish to leave the cotton in the canal it can be done by simply reversing the rotation; or, in other words, turning it backwards. In this manner one can leave the cotton in the desired position in the canal, this being one of the strong points in favor of the serrator.

61. DR. GRAFTON MUNROE, Springfield.

Showing another case by patient. The excessive abrasion and destruction of tooth substance by strong bite was restored by extensive restorations by means of inlay work.

The feature of the work was the opening of the bite and no devitalization of pulps. Twenty inlays of gold and six of acolite in different molars. The first inlays introduced were in the molar region and having thus decided the extent of opening the bite the front inlays were built to suit. No pins used but slight extension of the gold by *deeper pits* than the *circle retention* made about the periphery of each tooth without endangering the enamel. This applied especially where these inlays were separate, but in the lower the inlays were cast in groups of two or three. The lower bicuspid were grouped in pairs.

The case seen in the mouth had been used nearly two years and was willingly exhibited by an appreciative patient and seemed to be something that gave the other fellow a help in prospective cases.

Case II was an exhibit by models of a case of *excessive protrusion*, corrected by bridge work extending from bicuspid right to bicuspid left. The case was shown by models before extraction and after insertion of bridgework.

FRIDAY MORNING.

62. DR. J. P. BUCKLEY, Chicago. Resection of root for cure of chronic dento-alveolar abscess. Excused.

63. DR. HERBERT A. POTTS, Chicago. Trifacial neuralgia, alcohol injection for, or oral surgery. Excused.

64. DR. HERBERT KINDT, Chicago. Rapid method of filling simple occlusal cavity with long-roll gold. Gave the clinic but sent no report.

65. DR. G. W. HASKINS, Chicago. Proximal gold filling in superior bicuspid using non-cohesive gold. Did not give clinic; conditional excuse.

66. DR. W. A. NEECE, Astoria. Contour amalgam filling. Gave the clinic but sent no report.

67. DR. S. WOLLENBERGER, Chicago. Restoration with De Trey Synthetic Cement, giving a practical demonstration of the automaton.

The clinic consisted of a practical demonstration of the automaton, an automatic cotton roll holder, tongue depressor, cheek protector and successful substitute for rubber dam while operating on the teeth of the lower jaw, where a dry field is absolutely indicated. To show the possibilities of this instrument I selected three broken down incisors, one of which involved the gingival third, using Synthetic Porcelain Cement as my filling material. It is impossible to insert this material unless the field of operation is kept absolutely free from moisture, which I accomplished without any difficulty, although the operation took nearly one hour, thereby demonstrating beyond any doubt that the automaton is a practical substitute for rubber dam.

68. DR. LOUIS LADEWICH, Chicago. Exemplifying the Ladevich elevator. Gave no clinic; did not report.

69. DR. C. H. CONDIT, Gilman. Cleft-palate case, showing obturator, using the Condit removable bridge attachment in its construction. Excused.

70. DR. HAROLD HOLMES, Decatur. The painless extracting of teeth by the use of local anesthetic. Gave no clinic; did not report.

71. DR. F. J. BERNARD, Chicago. Nitrous-oxide and oxygen anesthesia. Gave the clinic but sent no report.

72. DR. RALSTON I. LEWIS, Chicago. Diagnostic and thera-

peutic value of the X-ray in dentistry. Gave the clinic but sent no report.

73. DR. O. G. COLLINS, Decatur. Extracting under somnoform.

Four cases were operated upon. Three simple extractions and one impacted lower third molar. The impacted tooth was removed by first drilling the process away distally with a bur in the engine and then, with the patient under somnoform, the tooth was removed with a Nevius No. 6 elevator.

74. DR. J. M. GILMORE, Chicago. Prophylaxis and pyorrhea. Gave no clinic; did not report.

75. DR. C. P. PRUYN, Chicago. Amalgam filling in upper first molar. Gave no clinic. Was unable to attend the meeting.

76. DR. E. M. ROBBINS, Carthage. Combination gold and tin filling. Gave no clinic; did not report.

77. DR. R. M. MORANGE, Chicago. Casting porcelain inlays. Excused; no gas in the building.

78. DR. C. L. HINE, Tuscola. Bandless molar crowns.

A crown to be used on a badly broken down tooth as well as a bandless crown, also a porcelain crown for a posterior tooth. Prepare and treat the roots first, being very thorough in everything. After the roots have been treated and filled, enlarge them so as to take a post 12 or 14 gauge.

If there are three well defined roots make a post for each. If the crown is for an abutment to a bridge, try and get good long posts, but if it is a single crown the post need not be more than five or six millimeters long.

Fit the posts to the canals, then remove them and bend the ends that are to be engaged in the cast metal a little in, so they will stand away from the edge of the canal. This will simplify matters very much, as the wax will engage the posts much better and thus help over the most difficult step.

Next select your tooth as to color and size; any good pinless or interchangeable tooth is all right. If there are undercuts fill them with wax or cement before beginning. Grind the tooth mesio-distally first, then grind the occlusion in part by repeated trial bites in the mouth. Of course this may be successfully done on the articulator, but I work almost altogether in the patient's mouth.

The next step is to get the posts and tooth in the patient's mouth.

This can be done in several ways. Perhaps the best is to get a good impression of the end of the roots and posts and make a die and swedge up a 30 gauge 24k gold cap and the same of the base of the tooth. Then after trimming same take a little inlay wax and press against the tooth; then press the tooth to place over the root. Or if you are working on the articulator, press it in position there, getting the alignment and pretty good occlusion. I like to leave the final grinding for the occlusion until the crown is finished, but care must be taken not to leave the tooth too long so as to weaken it by grinding it too thin.

After the tooth is shaped properly and in proper position see that the porcelain part can be removed readily so as not to distort the wax. Then mount, invest and cast. Do not try to make too close a joint between the porcelain tooth and roots, as it will be much easier and better to have plenty of metal for a base. In casting I use gold or Weston's metal; either is all right.

79. DR. EDWIN PAUL SWATEK, Chicago. Cast gold crown that will not impinge upon the gum tissue. Excused.

80. DR. L. D. HEAD, Ottawa. Metal base for Davis crown. Gave the clinic but sent no report.

81. DR. D. S. ANDERSON, Decatur. Seamless gold crown. Gave no clinic; did not report.

82. DR. P. A. PYPER, Pontiac. Esthetics in crown and bridge work.

A reproduction of a practical case, replacing all badly decayed, discolored, and leaking gold filled teeth with porcelain jacket crowns.

Replacing all Logan and gold crowns with band and pin attachment to root with detachable porcelain crowns baked to same, shading teeth at labial gingival portion by baking on high fusing porcelain 2560°.

A bridge from cuspid to first molar with cast abutment and base, using detachable porcelain crowns on cuspid and two bicuspids, preventing any display of gold, shading the same with china paints to harmonize with the rest of the teeth. Also models of cases of badly abraded sets of teeth, showing entire restoration of the upper set, using gold crowns or else gold capped inlays on the molars and all porcelain detachable crowns on ten anterior teeth baked to band and pin.

The object of the clinic was to use all porcelain in some form

on the ten anterior teeth to give the best possible esthetic appearance and showing that it is absolutely unnecessary to use gold crowns or have any gold show on any of the ten anterior teeth.

83. DR. W. C. DALBEY, DuQuoin. Some new original instruments.

Consisted, first, a grinder wheel device for slipping on the handpiece, with flexible duplex spring. The grinding wheel may be turned at any angle while holding the handpiece straight, especially for second and third molars.

Second, a root beveler for banded Richmonds, a device to slip on handpiece. A pivot on the device holds it in the canal of the tooth while a suitable beveling bur trims the periphery of the root, retaining the general outline of the root. Does not mutilate the gums.

Third, a lever device for clamping on an abscessed tooth which holds the tooth slightly from the socket and steadies it while working on it when treating. Can be placed on any tooth where a clamp can be placed.

Fourth, a device for transforming an ordinary metal syringe into a high pressure obtunder. The syringe is slipped into the device where a double screw is actuated upon the piston of the syringe. This is capable of producing from 1,000 to 2,000 pounds pressure.

Fifth, a device for using the Jiffy cement tube without collapsing the tube, and ejecting all the contents without waste. No part of the Jiffy comes in contact with the hands, therefore the hands are kept clean of cement.

Sixth, an invisible forceps for deciduous teeth. Cannot be seen by the patient in the hand.

Seventh, a buccal mouth guard and reflector. Mouth may be closed while the guard is in mouth.

Eighth, a device for obtunding a small area to insert needle therein. Consists of suitable handle upon end of which is socket holding red unvulcanized dental rubber. Surrounding whole is a small piece of tubing projecting slightly beyond the red rubber. A tiny pledget of cotton containing a solution of phenol and cocain crystals is placed against the red rubber at bottom of socket. The socket is then slightly pressed at place where the needle is to be inserted, thus anesthetizing the area.

Ninth, a stone wheel guard adjustable to any sized stone; device to slip on handpiece. Guard any stone $1 \times \frac{1}{4}$ inch in diameter.

84. DR. A. M. BARCOCK, Paxton. Simple method of backing up a facing. Gave no clinic; did not report.

85. DR. S. W. FAHRNEY, Chicago. Orthodontia. Excused.

86. DR. G. O. RUFF, Paris. Appliance to retain loosened pyorrhea teeth. Excused.

87. DR. FREDERICK B. NOYES, Chicago. Orthodontia. Excused.

88. DR. R. C. WILLETT, Peoria. Orthodontia, Pertaining to early dagnosis and treatment.

In giving this clinic only such cases were selected as should be observed at an early age. A series of models were exhibited showing the progress of the development of mal-occlusion of the teeth. and malformation and malrelation of the dental arches. These cases illustrated the simple beginning and the complication that followed. Models of like cases were exhibited where early treatment had been instituted.

89. DR. AUSTIN F. JAMES, Chicago. Pyorrhea. Gave the clinic but sent no report.

90. DR. L. L. DAVIS, Chicago. Casting of gold. Excused; sick.

91. DR. F. E. ROACH, Chicago. Something special in casting. Excused.

92. DR. W. E. FOSTER, Champaign. Methods of using crystal gold.

I have used it for several years and find it useful in starting fillings and finishing with cohesive gold, also repairing gold crowns and packing difficult places on bridges preparing them for soldering.

93. DR. T. T. BAKER, Litchfield. Inlay, using Alexander's plastic gold.

The procedure is the same as followed in making inlay except that you use the gold instead of wax, teasing the gold out of the cavity and investing and placing a small wire loop around the gold in the investment. After heating and drying place some borax on the gold and solder and heat from below until the gold refuses to take up any more solder. This gives you a beautiful inlay.

94. DR. H. M. HEGGLAND, Chicago. Porcelain jacket crown. Excused.

95. DR. E. H. HICKMAN, Arcola. Bicuspid split-pin cast cope porcelain crown. Excused.

96. DR. T. H. McCLURE, Chicago. Something in porcelain. Gave no clinic; did not report.

97. DR. W. R. R. CLICKNER, Bloomington. Porcelain crown. Gave no clinic; did not report.

98. DR. G. W. DITTMAR, Chicago. Anatomical occlusion. Gave the clinic but sent no report.

99. DR. FRANK J. RYAN, Chicago. Amalgam pitfalls.

My clinic at the recent meeting consisted of a series of amalgam fillings showing first a lot of the ordinary fillings that we are obliged to remove on account of recurrent decay. In my explanation I showed a very conclusive reason why each filling shown failed. Second, I showed a lot of fillings inserted by a number of good dentists under ideal conditions and all were imperfect. This showed that amalgam alone was not a complete filling material. Next, I showed a lot of glass tubes in which amalgam was inserted, again showing it to be impossible to perfectly fill the tubes with amalgam alone. Next I showed the same tubes that had first been lined with soft cement, then amalgam packed therein, showing the superiority of using soft cement in the insertion of every amalgam filling. I also called attention to the necessity of good cavity preparation and the way to mix and pack amalgam to get the best results. I furnished magnifying glasses for a better observation of the cases.

100. DR. J. LEGGETT, Chicago. Tooth restoration; skeleton inlays. Gave no clinic; did not report.

101. DR. C. L. SNYDER, Freeport. Gold inlay. Excused.

102. DR. EUGENE MAGINNIS, Chicago. Inlay root restoration in crown and bridge work, in which the band is used as matrix for obtaining the model and the restoration is cast against the band fusing with it, making band and restoration one solid piece. Gave no clinic; did not report.

103. DR. J. M. EVEY, Monmouth. The cast gold inlay; some defects and how to overcome them. Gave the clinic but sent no report.

104. DR. T. S. CHILDS, Decatur. Duplex gold and tin as a base for filling.

Tin has been recognized by dentists for a good many years as a filling par excellence, but on account of the tin itself being

difficult to operate, has not been used as extensively as it should. "Duplex Gold and Tin" is pure tin, gold plated, which makes it cohesive. It can be operated the same as gold and have the effect of a tin filling.

The clinic was filling a cavity four-fifths full of tin, then finishing with gold alone, giving the appearance of a gold filling and having the effect of a tin filling.

It is worked the same as gold, except annealing and malleting. Use hand pressure and do not anneal, as the tin will oxidize under heat.

105. DR. L. E. JORDAN, Ottawa. Accurate method of taking impression and bite for bridge work.

For the purpose of illustrating this method I will describe the construction of a lower posterior sanitary cast gold bridge reaching from the first bicuspid to the second molar.

Having the bands properly fitted and in place upon the roots, place a small piece of softened inlay wax in the molar band and instruct the patient to bite into it, at the same time pressing the overhanging wax against the buccal surface of the upper teeth. Chill with cold water and proceed in like manner with the bicuspid abutment. Remove the overhanging wax on the mesial of the molar and the distal of the bicuspid and take a plaster impression with the wax bites on their respective bands. If the bands fail to come off in the impression, carefully remove and place them in their proper positions, flow a film of wax on their inner surfaces to provide for their easy removal later on, and run up with plaster. Take a modeling compound impression of the upper teeth, being careful not to force the tray to a point where the compound will fill the undercuts and possibly distort the impression. If this is done carefully you will have a perfect impression of the occlusal surfaces which is all that is required. Run a plaster model from this impression.

Having procured the model with the original inlay wax bites still in position on their respective bands, place the model of the upper in the bite and mount upon the articulator. You will find it impossible for the upper model to seat itself except in its proper place. You are now ready to place a piece of softened inlay wax between the abutments and get the upper bite for the dummies without fear of moving the abutments. Proceed to carve up the

cusps for the entire piece, after which lay the dummies aside, for you are now ready to remove the abutments. Place a pellet of water-soaked cotton upon the wax cusps of the molar and pass a hot spatula several times around the gold band, when it can be easily removed, the wax cusps carved the required thickness and placed back upon the model. Proceed in like manner with the bicuspid and assemble the parts by tacking together with a hot spatula. If you wish to cast in a number of pieces and then assemble them you are at liberty to do so.

106. DR. CHARLES H. BRAMWELL, Chicago. Models illustrating newer methods in crown and bridge work, using the Goslee interchangeable tooth. Gave the clinic but sent no report.

107. DR. A. T. OLMSTED, LaSalle. Bridge and crown anchorage. Gave the clinic but sent no report.

108. DR. F. P. BUSHPIES, Chicago. Showing use of Alexander's gold and diatoric teeth in bridge work. Gave no clinic; did not report.

109. DR. J. CLINTON GRANT, Chicago. Removable bridges; attachment for porcelain crowns. Gave the clinic but sent no report.

110. DR. H. V. FRANK, Chicago. Porcelain jacket crown, showing delicate shading of color. Excused.

111. DR. A. V. LAUDERBACK, Chicago. A time-saving polishing disk.

A paper disc known as the brass-centered disc, made in ample variety of sizes and grits, with a brass center having a square hole and requiring a special mandrel. Its advantage is in that it requires no time for mounting or removal. It is mounted as picked up and removed by a slight pressure of the thumb while reaching for the next disc. Clinician demonstrated also the use of a case he had devised for these discs to be placed upon the operator's bracket, which enhances considerably the time-saving feature.

112. DR. H. W. STOTT, Monmouth. Some practical points in casting M. O. D. inlays.

Clinic demonstrating advantages of double sprue in M. O. D. cases. Facilitating easy removal of wax model and in casting the gold is driven direct against cervical and there held, making this class of cavities as perfectly fitted as single ones. An ordinary blind staple is used for sprue wire in this case. A slot is cut in base

to hold staple and soft wax flowed around so that when separated the mould will be smooth.

113. DR. GEORGE C. McCANN, Danville. Pointers on contact points. Excused.

114. DR. A. M. BRESSLER, Chicago. Interesting case, dentition showing perfectly erupted and developed fourth molar. Gave the clinic but sent no report.

115. DR. W. M. SHAW, Taylorville. Helpful hints on porcelain Davis crown. Gave the clinic but sent no report.

116. DR. C. F. B. STOWELL, Chicago. The Mauer jaw. Gave no clinic; did not report.

117. DR. E. M. S. FERNANDEZ, Chicago. A simple and definite method of marking dental instruments for the proper arrangement and placing; a place for each one and each one in its place.

By turning at the extremity of the back end of an instrument any special shape, such as a ball, or a cone, or an inverted cone, or a pear-shape, etc., the instruments will be marked for their own drawer, that is, those terminating in a ball will belong in one drawer, while those terminating in a cone will belong in another drawer, and so on, each end mark deciding the drawer in which the instrument belongs. To mark the instrument so as to denote its place in the drawer, a narrow groove is turned around the back end of the instrument, cutting on the first instrument close to its drawer mark, and cutting each instrument a trifle higher so that when all the instruments in one drawer are laid down in their place these cuts or marks will form a diagonal line, thereby defining each instrument to its place in the drawer; also by wider grooves cut around the handles where they do not interfere with the diagonal marks, the instruments can be marked in pairs, each pair having either one, two, three, or more grooves.

118. DR. H. S. SCHOFIELD, Kankakee. Simple and quick method of making a carved cusp shell crown. Excused.

119. DR. C. W. BUSHNELL, Chicago. Hints on laboratory work. Excused.

120. DR. C. N. THOMPSON, Chicago. Subject to be announced. Excused.

121. DR. J. H. PEARCE, Peoria. Some practical points in crown and bridge work.

A facing can be tipped and reinforced ready to assemble in a

short time and the liability of checking reduced if done in this manner. Use dentsply facings or sharpen pins of any tooth. Take a piece of pure gold, lay some on soft pine block and adapt gold to facing. Grasp firmly between fingers and with a sharp knife lay down a thin sliver of platinum from either side of pins. This holds backing firmly to facing. Take Goslee pliers and bend gold over the tip and turn it back again, making a trough or tube over the ground tip. Invest, solder, and fill your tip to any thickness desired.

122. DR. A. D. KYNER, Moweaqua. Pins for inlay retention. Excused.

123. DR. JOSEPH EISENSTAEDT, Chicago. Bilateral resection of the mandible, posterior to the molar teeth for the correction of prognathism; (a) plaster model of jaws before operation; (b) photographs of patient and models; (c) diagrammatic charts, showing calculation of form and measurement of segments resected in the operation.

1. Charts in oil of patient before and after operation, copied from profile views of photographs.

2. Plaster models mounted on articulator showing mesio-occlusion of lower teeth and infra and lingual occlusion of upper teeth.

3. Oil charts, showing operative technique and space left after bone segments were removed, with position of inferior dental nerve.

4. Oil charts, showing segments removed, fragments wired, disposition of excess dental nerve by looping, and care for latter by notching bone to prevent bone callous pressure upon nerve.

5. Photographs of patient's profile, with lips retracted by fingers, to show bite when teeth are in occlusion.

6. Skiagraph, showing absence of all wisdom teeth, under-development of jaw at its angle, with absence of normal mandibular inclination and over-development of mental portion of its body.

7. Diagrammatic crayon charts, showing method of calculating size and form of bone segments resected, from amount of mesial and infra occlusion, with one chart substantiating pre-operative calculation of segments, by the geometrical axiom, that in the difference between two planes or angles, the opposite angles and sides are equal.

124. DR. VINCENT LASBURY, Chicago. A system of making

gold crowns and bridges (cast cusps). Gave the clinic but sent no report.

125. DR. JOHN BOHR, Chicago. Cast aluminum plates. Gave the clinic but sent no report.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, MAY, 1912.

DISCUSSION OF DR. MOLT'S PAPER.

DR. C. N. JOHNSON, Chicago:

Dr. Molt's paper impresses me as being one of the most concise and comprehensive presentations of the subject that I have ever read. His first statement of the rapidly increasing percentage of city population over country population is startling. To change a percentage in one century from three to thirty-three, and to recognize the fact that in one state the urban population is 95 per cent and in another 91 per cent, is sufficient to make us pause and consider the possible effects of this transformation. In our own state 54 per cent of the people live in cities. What does this signify? Dr. Molt has dwelt briefly on some of the phases of this change, and it would be profitable if we had the time to elaborate at greater length on the sociological factors involved.

But one thing is evident—that if we are to maintain the physical well-being of the people under the material handicap of an increasing congestion of population in certain circumscribed centers we must have a keener appreciation of the relation between the individual and the community than we have ever had in the past. We must learn the fundamental lesson that whatever affects the individual affects in a cumulative sense the community in which he lives. A contagious disease in a child in the country is not so serious a matter as it is in one in the city where the congestion of population is such that the contagion may easily be spread among a great many other children.

Another fact: We are just beginning to recognize the relation between physical perfection and mental and moral stamina in the child. In the past we have not sufficiently grasped the fact that mental and moral obliquities often have their basis in physical defects. These two things—the desire to control contagion and to advance

the efficiency of our children—have led to inspection of children congregating in large numbers in our public schools.

Dr. Molt has traced the progress of this movement in a very consecutive way, and has shown its significance, but I wish to refer briefly to what I believe to be the most important function of state or city, supervision, and the main object of private philanthropy. We are quite likely in the enthusiastic beneficence of our hearts, at the moment when we are relieving suffering, to fall into the conviction that the relief of this suffering, is the sole end and object of our ministrations, but this is by no means true. The relief of suffering is important and imperative, but the greatest good we can ever do by our supervision and our relief, and toward which all of our energies should be directed, is educative. To teach people how to avoid being sick is infinitely better than to make them well after they are sick, laudable as the latter function may be. And in this connection I am not sure that there is not grave danger that we may do much harm in the administration of our free public service unless we exercise great care. For the state to accept a burden which legitimately belongs to the individual is just as bad as it is for an individual to accept a burden which belongs to the state. The state or city has a right to protect itself against the carelessness, negligence or ignorance of the individual and this inspection, if rightly performed, cannot be questioned. If defects are found and it is beyond the power of the individual to remedy them, then the state should have the right to do so. But we must avoid the danger of encouraging the individual to rely on the state to perform functions for him which should be assumed by himself. In other words we must not dispense charity indiscriminately unless we wish to deliberately foster dependence and pauperism in our midst. There will always be enough of the emergencies and a sufficient number of the worthy poor to tax our energies to the utmost in affording temporary relief in our free infirmary work, so that this work is exceedingly important, but the trend of our endeavors should be in the direction of educating the people up to the point of taking care of themselves. To my mind the function of the free infirmary is two-fold—to relieve suffering, and to teach by demonstration the value of preventive and curative service—the latter being wholly educational.

It may be of interest to the members of the society to state in

brief the progress of the work in Chicago. First the Odontological Society started inspection work and established a free infirmary at the 93rd street school. Shortly after this the Chicago Dental Society appointed a commission to take up the work and these two organizations combined to carry on the movement. About 28,000 children have so far been examined, showing a percentage of 95 who are in need of dental service. Equipment has been secured for four infirmaries and there are three in operation—two equipments being in one school. All of the work has so far been performed by voluntary service on the part of the profession. Recently one of the public spirited citizens of Chicago, Mr. Julius Rosenwald, has volunteered to equip six additional infirmaries, making ten in all, and to maintain them with salaries for operators aggregating \$10,000 per year until such time as the city can be induced to take over the work. This at once places the movement on a permanent basis. Time will not permit a full presentation of the details of our plans but we feel that in Chicago we are rapidly solving the problem of controlling a condition which has long since cried out for relief. Too often the spectacle has been presented of infirmaries being established on the enthusiasm of the moment, and then when this enthusiasm has waned the effort has died down leaving some idle equipment and empty chairs. Thus has a worthy movement often been brought into disrepute. In Chicago we have moved along conservative lines but we have made sure of our ground and are now placed in a position by Mr. Rosenwald's generosity where we need have no fear of the future. The ultimate aim is to have the city assume the responsibility of the work and carry it on under the direction of the department of health. We look upon it as a civic duty, because it is in reality a civic economy.

DR. E. L. BURROUGHS, Edwardsville. Ill.:

Dr. Molt's paper reminds me of an introductory remark made by the president of a normal school when addressing a graduating class composed of young men and women, in which he said, "My young people, you must have some fixed purpose or aim in life, then hitch your wagon to a star and hang on."

In sum and substance I am in hearty accord with the ideas set forth by Dr. Molt, although I want to emphasize the thought of conservation. Too much gratuitous dispensation of services on the

part of the profession may work hardships upon its members, and encourage pauperism among certain classes who might otherwise have been willing to pay for good dental services.

The trend of the present generation is to live by mental attainments and not by physical conditions as in past years and yet we cannot expect perfect mental conditions to exist within a poor, dwarfed, stunted physical body, so this brings us to a starting point—the mouth and its appendage and the greater need of caring for them. And who is more competent than the dentist; knowing the many ills resulting from improperly kept teeth and oral cavities; to suggest a remedy for the same? The essayist has said, “that caries of the teeth is essentially a children’s disease, and its ravages are greatest just at the time when the child needs all its vitality.” Those of you who have been alive, serving the respective communities in which you live and making careful observations, know the truthfulness of this statement; and how essential it is to protect the teeth of our little patients against the ravages of decay until the time of maturity.

If, from a lack of knowledge along these lines, on the part of the parents and children, they cannot be induced to come to us—then I feel it our bounden duty to go to them; through the media of the school teachers and boards of education, into the schools not for the purpose of specific gratuitous operations, but chiefly in an advisory way. Much good has already been done along the line of school inspection, and with the wave of prophylaxis and oral hygiene now surging upon us our task is only begun.

Entering upon this new task we must not expect smooth sailing, but look for sneers and rebuffs from the public, wishing to criticise us for such a means of advertising the dental profession. Let us not be too hasty in rushing into school inspection until each and every one of us has done his or her full duty at the office; and right here I think the profession as a whole is much below par. Think of the good to be done if each practitioner would reach one new family every month and continue the good work for ten years. What a debt of gratitude would be due the members of the dental profession. As a result of our open meeting at Edwardsville, March 15, 1912, at which time Drs. Johnson and Logan addressed an audience of 1,200 people, much good along the line of dental inspection at the office has been accomplished and parents who once

never gave their children's teeth a care or thought, have since that time been seeking dental services with a view of preserving those organs.

Those of you whose efforts have met discouragement and a lack of appreciation may find solace in the following quotation from Bulwer:

"Whosoever with an earnest soul
Strives for some end from this low world afar;
Still upward travels though he miss the goal,
And strays—but toward a star."

DR. HORACE THARP, Chicago:

We have heard a great deal about oral hygiene during these meetings. It came in for its full share of consideration by the president in his annual address and also in the report of the Public Service Commission. Dr. Bentley's essay was all oral hygiene and the essay this evening draws our attention to the problem of teaching oral hygiene to the school children. After all that has been said, I do not believe I can say very much in discussing this subject.

I wish to congratulate Dr. Molt upon the excellent essay he has presented and upon the results he has accomplished in Chicago. He says in his paper that there are four hundred thousand children defective teeth. I may add that this record of the thirty-three thousand have been examined, and that thirty thousand or more have defective teeth. I may add that this record of the thirty-three thousand who have been examined was not made of children who live exclusively in the poor districts. The schools of Hyde Park, Englewood, Roseland, as well as Woodlawn, alongside the poorer districts in South Chicago, were included in the examination. It is representative of a part of the city poor and of the better districts.

I consider the announcement of the gift by Mr. Rosenwald the most important announcement we have heard in reference to school work. The school clinics are needed, and they need regular dentists who can give their whole time to run them. This gift has made it possible to secure these men and to carry on this work with greater efficiency.

DR. JOHN P. BUCKLEY, Chicago:

We who are from Chicago are proud of Dr. Molt, and espe-

cially proud of the work he is doing and the results he has accomplished.

I am pleased tonight to look over this audience and see so many ladies here. We must come to realize—I know I have myself—that if we are to be successful and accomplish the results that are due this great work, it must be accomplished largely through the influence and efforts of the ladies. The men mean well enough, it is true, but too frequently we foolishly lead ourselves to believe that we are too busy with the personal problems of life to bother with such matters as health and morals of a community; but I want to say to you that there is no problem greater than the problem which relates to our health, for upon it depends our future success and happiness in life. Therefore, if we are going to accomplish all that is possible to be accomplished, we must appeal to the women's clubs and to the various other organizations of women.

Dr. Molt has said, and it has been referred to by other speakers, that conservation is in the air, but the effort in the past has been more along the line of trying to conserve our forests, or coal fields, and our live stock than it has been toward the conservation of the health of our citizens. Some one has said that the greatest asset a nation can have is its human asset. We are just beginning to learn that fundamental truth. Something like fifteen years ago the Hon. Wm. E. Mason, then United States Senator from Illinois, introduced a bill in Congress which, had it passed, would have appropriated ten thousand dollars for the purpose of studying the causes and prevention of tuberculosis. The Congressmen of that day did not appreciate the value and importance of such investigation. The bill, therefore, was held up and killed, and the spirit thereof was forced to travel the road that leads to nowhere and benefits nobody. Last year the National Association for the Study and Prevention of Tuberculosis spent fourteen million five hundred thousand dollars for the purpose for which the organization exists. Until very recently we have spent more time and more money on conserving our live stock than we have on the conservation of our children. It takes a long time to have measures of importance adopted and put into action; but through the unceasing efforts of such public spirited men as Senator Owen, of Oklahoma, much has been accomplished. This man, when he rose on the floor of the United States Senate, was asked who he was. He replied, "by the laws of the United

States I am an Indian, but by the Grace of God I am an American citizen."

Senator Owen has done more than any other Senator or any other representative outside of the medical profession toward directing the public thought towards the conservation of our citizenship, and through the efforts of such a man, and Dr. Wiley, late Chief of the Chemical Department of the United States Government, Dr. Hurty, of Indianapolis, Dr. Wm. A. Evans, of Chicago, the people of this country are beginning to learn that as Roosevelt has said, the greatest asset that a nation can have is the human asset.

If carried out to its full fruition, this oral hygiene movement that is sweeping over the country today will accomplish a great deal. I was glad to have been present last night and hear the paper of Dr. Bentley. I was glad to listen to his admonitions of caution to go slow, lest we would not in the end accomplish that which we want to accomplish. If we go too fast, our mistakes might mean our defeat.

DR. DON M. GALLIE, Chicago :

I desire to congratulate the Society and compliment the essayist on the excellent paper he has presented before this body. I was glad to hear the last speaker mention the fact that the author of this paper by his work is playing an important part in the great uplift movement in the City of Chicago.

The name of Dr. Evans was mentioned, and applause immediately followed. He was the first man to present this question in such a way that the whole country has taken it up. It was really at his suggestion that we started the work and had a committee appointed by which it was possible to have a dentist appointed on the Board of Education of the City of Chicago, and fortunately (through a Civil Service examination) Dr. Molt was appointed, and the City of Chicago and the school children of Chicago are to be congratulated upon the excellent choice that was made. Associated with us in this work also we have the superintendent of schools in the City of Chicago, that great woman, Ella Flagg Young. (Applause.) She is supporting this work as she supports all great movements that will in any way take care of the lives and health of our little ones.

It must have surprised you to hear the figures presented by Dr.

Molt as to the numbers that are living in cities or towns in comparison with those that live in the country. Stop and think what that means. I saw pictures of the country lad at twelve and of the city lad or kid at twelve. The country lad was a big, husky chap, while the city lad was thin and skinny, and when you stop to think of the the great percentage of people living in a town subjected to all that goes with crowded conditions, and consider the environment under which they are living, it must appeal to us all that the most vigilant care must be taken in this age to preserve the health of these children. It is not only a question of school examination; let us get away from that. The examination of the teeth of these children is a small portion of the great work. It is likewise very essential for us to educate them. We must educate the parents of such children, and we must induce the teachers to help us, because while can give advice and map out plans, our work will not go very far alone unless we have the aid of the school teachers, the mothers, the school boards, etc., and the school teachers can do a great deal in this movement. I want to relate to you briefly the experience we had in the Jones school:

The first day we arrived the children were marched into school. There were Irish, Jewish and Italian children. The first ones were the little wee tots, and the dearest little woman was in charge of them, and we were told that she had been in charge of that department for twenty-five years. She marched the kids in, and they sat down as quiet as little mice. She called out their names, and not one of the little tots was afraid to come forward and have their teeth examined. She encouraged them and cheered them. She would have them go through certain exercises and tell them to select their partners, and the little dagos would select their little girls to go around in the grand march. They went on with their dancing, and it was really astonishing to see the gallantry and courtesy that those little chaps displayed toward the little girls. They marched out and said good-bye to us, and we simply could not find words to express our admiration.

The next class came, in which there were some large children, and as they came in there was confusion and a racket, one making a crack at another, and there was the deuce to pay. Some of them hesitated, that is, the larger children, to come forward. One girl, a rather large child, came forward, and as she did so the teacher said,

"Cut her tongue out." One of the pupils looked as though he had not seen water from the day of his birth. He was chewing gum. We examined these children, and when the time came for dismissal the door was hardly wide enough for them to get out, as they tumbled over each other. That was the impression they made upon Dr. Buckley and myself.

We need teachers that can take care of the children. We need not only the aid of the school teacher, but we need the assistance of school boards, because without their aid we are not able to carry on this work. We need the teachers and school boards for the purpose of bringing this movement to our legislators, because unfortunately many of our legislators feel that this is a selfish movement on our part, and that we are only boosting our own game; but if we can interest the teachers and we find we have their assistance and their approval, we can accomplish something.

In many places, particularly in the schools of Chicago, we have had the assistance of the teachers and approval of the school board. If they will work with the dentists in the community this matter can be presented in such a way that our state legislators or state officials will be able to aid us. There should be no difficulty in presenting the matter in such a way that they cannot for a moment feel that it is for our gain. It is not a question of finding cavities in the teeth of children. This is a great campaign, and what I want to keep before the members of the society is that this movement is for the purpose of preventing cavities in teeth and diseased conditions in the mouth by which dentists may make big incomes. I think we should keep this in mind and carry on this work with the idea that it is preventive and not for curative purposes only.

I am sorry we have met here at this time, when the legislature is in session. Some of the legislators may be here, and it is a pity that this subject could not have been presented at a time when more men in authority could have been here and have heard the discussion, because I believe it would have been beneficial, and I believe wherever we can we should have a paper such as Dr. Molt has given us. We have a message to deliver. We have something that people must and should know, and if we are not the ones to deliver this message and to guide them in the work to be carried on, I would like to know

who will do it. But we must present it and ask the aid of outsiders, so that the matter may be presented in such a way that we will not be charged with a selfish interest. Investigation shows that we are far behind European countries in this great work; yet we never lose the opportunity of boasting and of blowing about our superiority in things dental. In German cities, and in cities throughout Great Britain, in France, and even in Russia, they are in advance of us in this movement so far as we may look at it from a state or national standpoint. So I believe that this society and the societies of different states should make this the principal work for the next few years, and this society should appoint at this time a committee that will represent the Illinois State Dental Society at the great Congress that is to be held in Washington in September where they will not only discuss this phase of public health, but other great questions pertaining to hygiene and sanitary science. This society should be officially represented at that great Congress, and I hope such action will be taken by the council, if it has not already been done. This great meeting will have representatives from all over the world. Unless we carry on this work in an organized manner, we cannot expect to accomplish all that is expected of us. (Applause.)

DR. C. E. BENTLEY, Chicago:

It will not be necessary for me to discuss this paper, as that has already been done by those who preceded me. I am going to pay Dr. Molt the compliment that his paper is a thesis and will be considered a classic in the literature on this subject. I only wish to emphasize the importance of it for the reason there may be in this audience some people who are not entirely conversant with the details of it.

A few years ago this subject began to be endemic; today it is epidemic. It is a tidal wave sweeping over not only this country but the civilized world. It is in response to the growing demand for the conservation of the health of all the people. There are many contributing factors to this new tra. The oral hygiene wave is but one. Are we prepared for it? The best that can be said of our efforts today is that we are simply feeling our way, and that is the reason some of us advise caution should be taken in this matter, because it is attended with tremendous possibilities as well

as tremendous responsibilities. To those who are not conversant with some of these things, I will refer to that phase of the paper in which Dr. Molt made a classification of the number of diseases which may emanate from an unclean mouth. For instance, this chart (indicating) is sufficient for purposes of education. It shows bad teeth, cause of ill health. Over twenty varieties of disease germs have been found in the mouth, including those of diphtheria, tuberculosis, pneumonia, influenza, typhoid, etc. This means that in an unclean mouth, in which there are a number of cavities that have been neglected, these organisms creating disease find a favorable habitat and there multiply *ad infinitum*, and the constant swallowing of the diseased germs, with a pre-disposition toward such a condition, may cause any of these diseases to be contracted by reason of an unclean mouth. That of itself should be sufficiently significant and appeal to the intelligence of the layman or to anybody else. Hence, as an economic necessity, we should carry on an educational propaganda that has for its object the education of the laity as well as the purpose and importance of caring for unclean mouths in children.

The word pauperizing has been mentioned here tonight. Ladies and gentlemen, I am not afraid of pauperizing any great number of our community by reason of this educational propaganda. I believe when we get our machinery sufficiently under intelligent control and in systematic order; when we link this movement with SOCIAL SERVICE workers and allied organizations, as we must ultimately, we can have the advantage of the machinery of social workers who have methods of inquiry as to the ability of the parents to pay. I believe that when we are allied to some such organizations as those we will not have very much abuse; but even if that charity is abused occasionally, is it not better rather than have the children go uncared for and become a positive menace to the community? I am not afraid of pauperization in this movement in the light of so much knowledge which we have from social service workers. I would rather subscribe to the sentiment of helping those who cannot help themselves than be afraid of being imposed upon for giving charity.

Since the paper I read last evening I have been approached today by quite a number of young men who seem to have been interested, and they said to me, "How can this work be started in my town? How can we go to work and do this thing?" I told

them that I have no particular method by which I can direct them. I have told them that if they would put themselves in touch with the Public Service Commission they could get information as to how to proceed. But I will say to some of these young men I would avoid some things; to begin with, I would not attempt to work alone for obvious reasons. I would not attempt to work in a movement of this kind unless I could get the cooperation of my local organization. I would enlist the interest of the mothers' clubs, the women's clubs, and kindred organizations, and then, after you have excited them, keep alive their interest. If you can, enlist a speaker to come from afar who is interested in the subject. Then, it may be possible to interest the teachers, and in turn the boards of education. If you have a dental organization as a unit in your community, and it is anxious to carry on this work with the teachers and boards of education, you have a nucleus for effective work that must ultimately do this thing; if you can create sufficient sentiment in your community to teach dental inspection, it can be carried on through these agencies, which ultimately ought to be taken over and responsibility assumed by the local government. This work, in order to be permanent, can only be made so by absolute control under the management and supervision of the local government.

I want to say one other word as to how this can be most effective. Dental inspection can be carried on effectively by what is called squad work; that is to say, you dentists can take fifty children and put their mouths in order, teach them how to use the tooth brush, and watch them for six months or longer. Then compare them with fifty who have been left uncared for, and you can show conclusively to the school board and to the women's clubs the influence of dental care and supervision of the fifty children as against those who were not cared for. These experimental squads are carried on throughout the country. Their testimony is convincing. It has demonstrated three things—a greater aptitude for study, a greater zest for play and a marked decrease in the absence of children from school. These three things fundamentally form a great part of the life of the child and contribute to its making or unmaking in school. Wherever this dental inspection is carried out, I should think it would be possible to have this experimental squad work carried out as well.

DR. J. N. CROUSE, Chicago:

I have given this subject of who should care for these children's teeth and the methods of doing it, a good deal of study, and for years I have had it in mind to spring a proposition that the trained kindergarten teachers are the ones to make these examinations and to teach the children how to take care of their mouths. They are educated women. They are trained in hand work; they know how to take care of children, and you will find everywhere the kindergarten is based on a sound philosophy. I am much interested in the Chicago Kindergarten School. Within five weeks the National Kindergarten Association, of New York, with a great many rich people associated with it, have come out with a proposition to unite with the Chicago Kindergarten College. We expect to put up a building, and expect to have branches of the one school in several different states. These girls are trained with their fingers, and they are the ones to train the children in the proper care of the teeth. But they will have to be trained themselves, so that they will know this process of the care of the teeth and of the mouth that is necessary.

The Chicago Kindergarten College has been in existence twenty-seven years. It is my wife's monument. It is doing great good, and every graduate from it can get a position, and salary anywhere from a thousand to two thousand dollars after graduation. If I can get some of you to help me, we will go to these normal teachers. This school does not send out kindergarten teachers; it sends out normal teachers and trained kindergartners to the different states. This brings us into touch with the children, and especially the poor children, because in the larger cities many of the kindergartens are kept up by some organization that pays salaries to the teachers. This is something I have thought of, and I am going to try to arrange for a course of lectures for the normal teachers, so that they can show the kindergartners how to do this work. In this way we would get rid of the jealousy of dentists who want to make the examinations. Somebody told me that the applications for making these examinations were generally from dentists who were striving to increase their practices. Of course, that would create

jealousy, while the method I have outlined, if carried out, would get rid of it, and also place the matter in a popular light before the Board of Education. Mrs. Young is interested in it. In my opinion, it is a way out of this very deep problem—at least, a part of it.

I appreciate what has been said here, that we should do our part in this great movement, and if we would do so we will have to get busy.

DR. GEORGE H. HENDERSON, Springfield:

This is a very important subject. It is so important that we hardly grasp the beginning of its meaning. The papers that we have had on this question at this meeting have been very instructive, but there is one phase of the question that has hardly been broached. Let us take those children who are defective, who by reason of defective teeth, by reason of defective health are weak—will they become the men and women that they would if they have not their teeth attended to and their health properly cared for? If we take one set of children and let them grow up in ignorance of dentistry, in ignorance of health, in ignorance of the things that we have been talking about here, will they make the men and women of the future that they would if they have the other training that has been talked of here? Remember, the children of today are the fathers and mothers of tomorrow. Remember, the child who loses its molars in early life will never become as strong, as able, and as physically willing and able to take its place in life and struggle for existence, while the children who are cared for, by reason of the care of their health and of their teeth, will develop into a stronger race than those who are left alone. This is a thought that I want to leave with you, and I hope the dentists will look into this question, as I have studied it for years and I believe I am on the right track, and I hope some of you will look into it as I have done and see whether I am right or not.

DR. W. H. G. LOGAN, Chicago:

It may be wise that I say a word or two about how you are going to make examinations of the teeth of the school children. In the first place, do not write to the chairman of the Public Service Commission and say, I am interested in this work and want to carry

it out, and how am I going to do it, but let us suppose that in a certain town there are five or ten dentists. Let these dentists get together and agree if they wish to do this thing. If one man starts in and he writes to the commission, or before he writes to the commission goes to the school board, and the school board gives him permission to carry on the work, it becomes a one-man proposition, and all of the other dentists, who are quite as much interested in this movement as he is, feel that the little courtesies that were due them have been overlooked. So before you select some one gentleman, find out if you all agree about it. If you agree, go ahead by taking it up with the commission as to how the work should be done.

Something has been said about pauperism. We do not worry much about that. The charity committees in every town will furnish us with the names of people who deserve to receive charity. Let me tell you a story which is a little off the line of charity. In the home town of our president, at Edwardsville, Dr. Johnson delivered an address upon the question of health. This question of health of the people you must keep in mind. You must get in touch with the physicians in the town, and when the physicians and the dentists come together and work hand in hand, then you are working for the common good in the right way. When Dr. Johnson was in Edwardsville the physicians in that town were all present, and after the address was over we were in front of the opera house. Dr. Johnson, of course, as the speaker, was a marked man. He, with the president and one or two others, were standing in front of the opera house when I saw a little child looking at Dr. Johnson in a wistful way. Her face was drawn and pinched. Then I looked more closely, and I found she was standing on one foot that was perfectly straight, but on the other side the ankle was turned. There was a defect in the form of the limb. That child had been told that afternoon that every child was entitled to good health, that if the proper thing was done to all humanity we would all be strong, and that little one had listened to that story. She looked and looked at Dr. Johnson while we were there standing on the sidewalk. We then went about half a block, and as I turned around here was the little girl looking at him again. We took an automobile ride, went around the other end of the city, and looking out of the automobile I saw the little girl stop and look at the machine, she recognizing

who was in it. Then we went back, and I told Dr. Johnson the story, and the result of it was this: Dr. Burroughs and Dr. Corbett in particular have been trying to find this little girl since. The superintendent of schools down there has promised that he will get the little girl for us, and when we do get her, if science will straighten her foot, we are going to do it. A year's work will be paid for if we can do that much.

In reference to the school boards, you need not use your influence on the school boards very much up and down the state. The school teachers and superintendents are ever ready to help the dentists in this good work. You must be awake as dentists. It is necessary for you to agree among yourselves and work in harmony, and if you do this you will work in the right way, I am sure.

DR. F. F. MOLT, Chicago (closing the discussion):

There are only a few points I want to cover. If we try to follow the charity regulations and cooperate with the charity organizations, there will be no difficulty of the kind that has been mentioned. There may be an occasional case where parents could pay for services in taking care of their children. I have in mind a case at a certain school where the principal came to me and said, "Doctor, what are your regulations in dispensary work?" I told her, and she said, "I have a little Italian boy whose mouth is in a bad condition; he is suffering from toothache every day." She said that the mother of the boy had said she only had one tooth in her head; that she had never had any dental service, and her children were not going to have it. It was found that this woman was amply able to pay for service of that kind rendered to her child. What are you going to do in a case of that kind? I do not think there is any danger of running short of people who need attention in a dental way. Not over ten per cent of the people in the United States receive dental service, and if we can reach ninety per cent we will have all we can do, I am sure.

There is some talk about the danger of vicious paternalism. I am turning toward the socialistic aspect every day. Eventually we will come to the point where we can give these children service and charge the parents on the basis of taxes just the same as we put down cement walks and charge people special assessments.

Dr. Bentley has well said, we must educate teachers; the teachers are more alive to the possibilities of the work than a great many men in the dental profession.

I am afraid I did not talk loud enough for Dr. Henderson to hear my remarks with reference to improving the race, because that was really the basis of my paper. It simmers down to the matter of eugenics entirely. Teachers are alive to the attitude of the profession who are doing this work. Recently, when it was remarked throughout the city that more dispensaries were to be instituted, I was called up by a number of different members of the teaching profession to consider their section of the city in locating dispensaries. They realize how much good these dispensaries have done where they have been located, and they want to give their own children the benefit of the services.

I coincide with Dr. Lotz in his request that a committee be appointed to work on this matter of inspection. I think every city should have a mandatory inspection law. We must work hand in hand with the medical profession, and this society should appoint a committee to offer its cooperation to the medical profession in the securing of a mandatory inspection law for the state.

CHICAGO DENTAL SOCIETY.

A regular meeting was held October 15, 1912, with the President, Dr. J. H. Prothero, in the chair.

This meeting consisted of a symposium on the work of the Public Service Commission and the Oral Hygiene Movement.

Dr. C. N. Johnson read a paper entitled "Public Service Abroad."

Dr. Claude B. Warner read a paper entitled "The Work of the State Committee."

Dr. Clara H. Town made an address on "The Relationship Between Oral Diseases and Dental Defects."

Dr. F. B. Moorehead spoke on "What the Present Means to the Dentist and the Community."

DISCUSSION.

DR. ARTHUR D. BLACK:

The presentation of these subjects ought to give us some idea of the very large problems in which the dental profession is becoming involved. We are facing a big educational problem; a big problem in the education of ourselves, because we must know more about all of these things; a big problem in the education of the people, because they are anxious to know more. These are coming to be public problems in which the dentist is most vitally interested.

We have all been interested in what Dr. Johnson has said regarding the attitude of the government of Australia towards the care and conservation of the health of the children in that country. This is not different from the attitude taken by the trustees of the Forsyth Memorial in Boston in the announcement of that magnificent building and the endowment of it, for which they have set aside two million dollars. They state specifically that it is not a charitable, but a purely educational institution, notwithstanding the fact that one of the objects of this endowment is to take care of the teeth of the poor children of Boston. They propose to teach the people of this country the importance of the care of the teeth and health of our children, in the hope our government, either national or by states, will come to look at this problem very much the same as they have in Australia. They take the ground that there should be provided by the government means of caring for the health of the children in somewhat the same way that the government cares for their education; that we should have in each community a health clinic, to which the people may go to get advice, to get care if they need it, provided they are not able to pay for it.

I would like to speak briefly of what we ought to do in Chicago. This problem is so vast, so broad, that as we look at it many of us are inclined to throw up our hands and do nothing because we do not see where to start, and we do not see where we are going to finish. It is certain that none of us know where we are going to finish, but we ought before long to find a definite place to start. We have sufficient statistics to convince any man that there is good to be gained by the care of the teeth of our school

children. The Chicago Dental Society has made a start in a small way. We ought to develop a systematic plan, not only for the examination of the teeth of the children of our public schools, but for general physical examinations by members of the medical profession, and mental examinations by psychologists. This should be done for definite, selected groups of abnormal and normal children, and should be followed subsequently by examinations at stated periods, so that we will know what results we are getting.

I am sure we are all very much interested in what Dr. Town had to say of the grading of children according to their mentality. I doubt if there are many who have thought much about that. In our own state institutions for the blind, the deaf and dumb, feeble-minded and others, each child is tested mentally, is given a mental age, if I may put it that way, and classified accordingly, so that we may have in the same class children who range in ages from five to twelve or fifteen, because mentally they are all the same age.

If we are going to set an example for the world in this work, as we hope to do in Chicago, we must develop a definite system, so that when we have carried on the work for two or three years we will be able to show exactly what we have accomplished. We ought not to be satisfied to run a few dental clinics; the opportunity is too great to allow it to pass in that way. Mr. Rosenwald has given us an opportunity to start, and I know enough of him to know that he wants us to start right, and if the members of this society will get behind this work in earnest, we can accomplish results which will redound very materially to the credit of the dental profession, and will eventually add to the health and development of our children.

This work, as any other work of progress, must be a work of sacrifice. The members of the dental profession who think they are going to make a lot of money as a result of this campaign of education are very much mistaken. Eventually and necessarily, anything which will improve the condition of our people from a dental standpoint, will redound to the credit of the dentists, both professionally and financially, but these are things that come around in such a vague way that it hard to trace them. If we take this matter up earnestly and seriously, we will be able to get results in the city of Chicago which will, as Dr. Johnson has suggested, lead

to the undertaking of similar work in practically every city in this country, and I believe it is worth while.

DR. F. F. MOLT:

It has been a great pleasure to all of us to have had the opportunity of listening to these papers. I do not know of any better and clearer exposition of the psychological aspect of this work than that which Dr. Town has presented, and I think if we would all familiarize ourselves with the principles laid down by Dr. Town and Dr. Moorehead tonight, we would know definitely what our duties are to our patients and to ourselves. Dr. Town's address was particularly interesting to me, because one of the cases she cited I had the pleasure of talking over with Dr. Kirk last month in Philadelphia. In Philadelphia, when the Evans Memorial is finished, they are going to have the best opportunity for research work of any place in this country, because they have a psychological laboratory and a dental school. The Forsyth Memorial also is going to offer opportunities for research work. It looks as if the profession is going to have exceptional opportunities for this investigatory work in the near future which we have not had in the past.

I am glad that Dr. Black spoke before I did, because what he has said is exactly what I wanted to say. We need to do research work more thoroughly today than it has ever been done before. We cannot wait two years until the Forsyth and Evans Memorials present these opportunities. Here in Chicago we have a psychological expert in the person of Dr. McMillan, who is in charge of the Child Study Department of the Board of Education, and the doctor and I talked over last spring just such a series of tests as Dr. Black said we need, and Dr. McMillan went so far as to have special blanks printed for this work.

In order to carry the work out thoroughly, though, there should be a series of tests, including physical and psychological as well as mental. It must include urinalysis, blood count, blood pressure, and so on, and neither he nor I could attempt to do it. It would require the continuous service of a physician for a period of from six to twelve months. This would mean an expenditure of from six hundred to twelve hundred dollars, and the funds are not in sight, so the matter has been dropped temporarily. But it

is an opportunity which we cannot afford to let go by, and in some way or other funds should be provided. The taking care of the children becomes eventually a matter of public education. It must in its final analysis be a public utility or public work, but before it can be accomplished we must educate everybody. Dr. Moorehead said that he disliked the ward politician more than any other person on the face of the earth, but the ward politician nevertheless indirectly controls the finances of the municipality and state, and we have to educate him in regard to the importance of our work, so that it may be carried on. This is one of the first things we should undertake—the matter of public education.

Mr. Ayres in his investigation in New York went into the matter of retarded children and classified them to a certain extent, but I am sure this work is susceptible to further classification, so that eventually we will be able to figure out just how much effect decayed teeth and diseased oral conditions have on the health of the children and their mental retardation. We know physicians who are working on this aspect of the problem, and a number of diseases can be traced to abnormal oral conditions, and our profession must get at these things more definitely than it has been done before, and right now is the time to do it.

DR. DON M. GALLIE:

I am sure those who have been fortunate enough to have heard the symposium presented this evening must have been impressed with the facts that were presented by Dr. Johnson regarding dentistry in Australia and what the government of that country is doing. We boast of the fact that we are Americans, and that American dentistry is so much superior to that of other countries, or that we as dentists are superior to all others, and we have been so self-satisfied that we are inclined to rest on our laurels, but after hearing the report of Dr. Johnson from the other side of the world and what they are doing for the children and people generally in that country, it seems to me that we should take hold of this work with renewed energy and vim. In a recent article by Dr. Jenkins of Germany he forcibly pointed out the necessity for the dentists of America making greater progress and of doing more advanced work, for the reason that the dentists in Germany were rapidly overtaking us and in many instances surpassing us in the

line of scientific and research work. In Germany they have the advantage of us the same as they have in Australia, namely, government support and a friendly press to aid them in their work. But with such efforts as Dr. Warner and the members of his committee are putting forth, and the recognition they are receiving, the time is not far distant when dentists will have the hearty support of the people in this great uplift movement. With the National Dental Association and the American Medical Association, active in civic and political affairs, with the influence of citizens and politicians back of us, I believe the day is not far distant when we will have a Department of Health in this country, which will embrace diseased conditions of the mouth and teeth. We owe much to Dr. Warner for the work he has done and has demonstrated here in the presentation of his paper tonight. Every section of the state of Illinois has had the benefit of a series of splendid articles.

I was very much impressed with the able address of Dr. Town, who has told us of the great work that has been carried on in the psychological laboratory. What she has said impresses us with the fact that we as dentists must read something more than dental journals. It is up to us to read more, to take part in, and to assume the responsibility of a learned profession, and to do our share in carrying on this great work. This great movement is sweeping not only over this country but the whole world in behalf of humanity, and we cannot remain cooped up in our dental offices, as there is a greater place for us. There is a great work for us to do, much more than simply the practice of dentistry. We have a great duty to perform, and it cannot be done by confining our work to one particular sphere.

As Dr. Molt has said, we come here and repeatedly talk about the great movement in Chicago and what great progress we are making, and yet with a society of twelve hundred members, only forty-five are engaged in doing this work in the public schools. Dr. Molt presented a list of names of one hundred schools that are as yet unattended. We have made appeal after appeal to the profession of Chicago to do their duty, and how many have responded? A few men cannot do this work. This great city requires every man to do his share, and I hope no report in the future will come before us stating that only forty-five men are in the ranks and are doing their share of the work.

DR. G. W. DITTMAR :

I do not wish to enter into a discussion of these excellent papers, but I want to say a few words regarding Dr. Warner. You probably noticed a remark that Dr. Warner made to the effect that if the Chicago Dental Society would not stand by the money that was donated for this work, he and the members of his committee would make it good. Personally, I feel that this is quite a reflection on the Chicago Dental Society. I think Dr. Warner has done a great work, as is evidenced by his report this evening. He was really the man who started this movement, he and the members of his committee are doing what they can to further it, and I hope the money donated by Chicago for this work will be returned to his committee.

DR. WARNER (closing the discussion) :

I wish everybody who belongs to this society to consider the editor of his newspaper to be his best friend, and to work hard for that newspaper. There should be a bond of sympathy between the dentist and the newspaper editor. We have learned how to run our business, and newspaper editors know how to run theirs. But let us get together.

Those dentists who are not doing any work outside of their offices for the benefit of the people, and in behalf of this great movement, are missing one-half of life. Gentlemen, you cannot get anything out of life except what you put into it. If you have not anything to do in the way of public service, go to Dr. Black and to Dr. Johnson and ask them what you can do. Go to work and you will feel very much happier.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

TAKING STOCK.

The time usually selected to take stock is at the beginning of each year, and this should apply as well to one's affairs in general as to the stock of goods the merchant has on his shelves. Each individual owes it to himself at the beginning of every January to stop and think carefully over his status to see what his position is compared with what it was a twelve-month before. It is only by such retrospection and introspection that he can form a definite idea as to what advancement he is making, or if indeed he is making any. It is true of course that a man should not form the habit of constantly looking backward instead of forward. His eyes should be turned toward the front, and yet an occasional glance over the road which has been traveled will often suggest a better means of traveling the road ahead. It is a pat phrase which says that we learn by experience, and yet no matter what experience we have had we do not learn by it unless we look back at it occasionally and study it.

In dentistry there are many things which make it profitable to take stock periodically. Methods of practice which have been tried out during the year should be considered in the light of determining how successful they have been. Accounts should be gone over most carefully and a systematic and definite plan to collect all overdue bills should be inaugurated. There should be a general cleaning up of all doubtful accounts in some manner, a careful canvass made of the possibilities involved in each account and a general summing up of the situation. If there has been an undue accumulation of accounts during the year it will be necessary to

concentrate attention on the matter and institute a reform. Too frequently the dentist is a poor collector and allows accounts to drift along indefinitely without following up the delinquent by correspondence or by personal interview. It usually follows that if a man is a poor collector he becomes indifferent about paying his own bills. All of this should be reformed and the first of the year is an excellent time to do it.

Then it is a very desirable thing to carefully check up one's assets and see how far one has advanced in material things during the year. If the result is not satisfactory one should make a careful review of the reasons, and if it is in one's power to change for the better—and it usually is—it should be done.

But most important of all is the necessity of looking into the matter of mental assets, to see whether or not one has developed mentally, or if there has been a satisfactory strengthening of character during the year. After all the chief thing in the world for an individual to consider is character, and this above everything should be checked up each year to see if there has been the proper growth along these lines. Altogether a man should take himself systematically in hand once a year and "take stock" of himself financially, mentally and morally. It will pay.

THE BROPHY BANQUET.

On February first, 1913, a banquet is to be tendered to Dr. T. W. Brophy by the Chicago Dental Society, announcement of which has already been made. It is expected that this will be one of the greatest events of the kind ever held by the profession—judging from the reports of the committee having the matter in hand. Men from nearly every part of the United States and Canada have already signified their intention to attend, as well as some from Europe.

These testimonials of esteem on the part of the profession to men who have attained to eminence in dentistry are along the right lines. They broaden sympathy, bind men closer together, increase respect one for another, and make better men of those who take part in them. They plant flowers of friendship which never after

fade, and they bring the laurel wreath to the brows of men while they are still living and can appreciate what is being done for them. Every one of these banquets which have been given in the past has enriched the profession beyond measure, and this coming one will be no exception. Its management has been placed in excellent hands and its success is assured. The chairman of the committee is Dr. A. D. Black, 915 Marshall Field Building, Chicago, and this of itself will ensure an able management of the affair.

THE EDITOR'S DESK.

- A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the December issue,)

HONOLULU CONTINUED.

Our next sensation was a drive of six miles up the Nuuanu valley to The Pali, an immense precipice in the mountains 1,200 feet above sea level with a sheer drop beyond the edge of hundreds of feet. It was over this precipice that the famous warrior chief Kamehameha in the early days drove the Oahuan army to utter destruction. As late as the advent of Dr. Whitney on the island the bleaching bones of these unfortunates were still in eloquent evidence of the heroic deeds performed in those heroic days. The mountains on either side of The Pali are 3,500 feet in height, and the wind sweeps down through the gap at a terrific velocity. It was all we could do to keep our feet, and hats were out of the question. The view from this point out across the island to the other shore was most commanding. Away down the mountain side the road zigzagged to the distant valley below where Libby, McNeil and Libby of Chicago have a pineapple cannery. The immense sweep of ocean shore was ribbed by a coral reef over which the breakers rolled toward the land.

We reluctantly tore ourselves from this enchanted spot and coasted leisurely down the mountain curves again to the town. Here we were suddenly transported from the beauties of nature to the beauties of art—a typical Japanese tea garden maintained by the beneficence of one of the leading bankers of Honolulu, Mr. S. M. Damon, and free for the inspection of visitors. My Indian girl and the Collector doffed their shoes—a requisite ceremony on enter-

ing a Japanese house—and went through the residence on the premises. Those girls were completely infatuated with everything they saw.

Next we drove to Young's Hotel where the Hawaiian Dental Society were to do me the honor of entertaining me at luncheon, and where I spent a couple of hours of the most delightful social and professional intercourse. Never have I been more charmingly entertained and I wish I had the space to write an adequate appreciation of that splendid body of men—men who have assembled



The Pali, Honolulu.

from different sections, mostly of course from the United States, to work out together the destinies of dentistry in this delightful clime. And let me here record to the everlasting honor of the men who are practicing there today, and particularly to the honor of the grand old pioneer of all who inaugurated the work on virgin soil, and who was the only practitioner on the islands for fifteen years, that there is today in Honolulu a relatively smaller per centage of artificial teeth worn by its citizens than in almost any other place I have ever visited. When a wreath is woven of the names of those who have contributed most to the material and mental wel-

fare of the people of the "Islands of the Blest" the name of J. M. Whitney shall rank high among the list. It is easy for the rest of us to follow where the road has been beaten smooth, but the test of true merit comes when we make our way alone through the thickets of a trackless wild.

After luncheon Dr. Whitney took me up to his office. I wanted the honor of standing within the walls where this man worked, and to look out upon the distant hills from his office window whence come the cooling breezes from the mountain side. He showed me a necklace of teeth which has a gruesome history. It was given him by a gentleman more than forty years ago who obtained it directly from a Cannibal chief in a distant island, presumably after he had been converted, and the particulars of which are these: Each tooth had been taken from a victim of his own slaughter, and inferentially of his own tasting. This chief must have been an exceedingly lusty individual with a varied taste, because there are about three hundred of these teeth of all sorts and conditions from the worn down incisors of an adult to the teeth of the merest child. I have figured it out in this wise: when he was very hungry and very mad he would tackle anything, even a tough old probationer who stood in need of much baking, but when he was not hard pressed and more discriminating he singled out the babes. Those who came in between were sort of hit and miss and haphazard like, with a natural predilection for a luscious enemy. I shall say more of Cannibalism in a subsequent chapter.

Next we visited the cannery of the Hawaiian Pineapple Company, the largest in the world, where we saw them canning the native pineapple. I wish to announce to a discriminating public that they may henceforth eat canned pineapple without the slightest apprehensions so far as cleanliness is concerned, because from the time the rough coat is peeled away no human hand touches the fruit. It is sorted and arranged in cans mostly by Japs but every hand is gloved, and the place is clean and sweet-smelling as your grandmother's kitchen. I never tasted pineapples before at their best, and I ate enough apparently to sink the "Makura," but they didn't do me any harm. This factory in the busy season runs night and day and it has a capacity of 8,000 cases every ten hours. There are 24 cans in a case and you may do your own figuring—the thing staggers me.

Before going to the boat I called at the rooms of the Hawaii Promotion Committee where I met Mr. H. P. Wood, the secretary, who showed me much courtesy.

And now comes the final scene—the departure. When the dentists took me to luncheon their good wives assumed charge of my three “girls” and entertained them most royally. After they had their luncheon our friend Harry from Chicago came around with his automobile and kept the ladies out sight-seeing all the



On the Dock at Honolulu.

afternoon, and when we rounded up at the boat it was with an overwhelming sense of the greatest day in our lives. The approach to Alakea wharf was swarming with native girls selling garlands of many colored flowers, and my friends hung these garlands about my neck till I looked like a Derby winner after a race. Along came my girls decorated in the same wondrous fashion, and their eyes sparkling as brightly as the flowers around their necks. I have seldom witnessed a scene so animated, and every one was bubbling over with hilarity and happiness.

Suddenly a burst of music cleaved the air—it was the world

famous native Hawaiian band of twenty-five pieces who had come down to serenade us on our departure. This beautiful custom I believe to be unique with Honolulu. On the sailing of every steamer this wonderful band assembles at the wharf and renders selections of popular music, winding up as the ship moves slowly away with their native Hawaiian air. I have never listened to anything more beautiful, nor did I ever witness a scene more stirring. Some of the garlands that were hung about our necks were tossed back to the friends on shore, and this charming custom of the interchange of flowers is only typical of the great loving heart of Honolulu. The friends on the dock, some of them only a day's acquaintance, yet dear to us as if we had known them all our lives, followed the ship to the end of the wharf where they waved, and waved, and waved again. The last face I saw as we steamed out into the harbor was that of Dr. Clark, and if the angels over Hawaii's enchanted isles record good deeds and true, they that night made a double mark for the day of happiness which he had given us. It is greater to make others happy than it is to win a kingdom.

Farewell my Honolulu,
Farewell till later day,
Farewell thou brilliant jewel,
Farewell but not for aye.

You're tugging at my heartstrings,
You're luring me with charms;
You're reaching o'er the ocean
With long and loving arms.

You're beckoning in the twilight,
You're waving in the morn,
You're pointing out a haven
Where naught but love is born.

I'm dreaming of your fragrance,
Your color and your charm;
Your wooded vales and mountain slopes,
Your breezes soft and warm.

I'm climbing up the Pali,
I'm bathing in the surf,
I'm sniffing up your odors
And I'm trodding on your turf.

I'm gazing at your faces,
The yellow and the white,
I'm walking down your avenues,
The shaded and the light.

And when my evening closes,
And day is nearly spent,
I'm coming back to revel
Under Eden's firmament.

Farewell my Honolulu,
Farewell till later day,
Farewell thou brilliant jewel,
Farewell but not for aye.

The Hawaiian language is music in my ears and there is one word in it in particular that I do not believe can be matched in any tongue. It is the word "Aloha," the meaning of which it would take a long time to define. It is in the nature of a friendly salutation, and is sometimes used in the sense of welcome, but the essence of it all is love, which I believe is as nearly the literal translation of the word as can be made. But no one can actually translate such a word as "Aloha," nor can any one pronounce it who has not been on the islands. It is the one ultimate expression of human sentiment, sympathy, affection, and hearty good will, and it springs spontaneously from the heart of a people who can teach us much in the softer graces of life. Sometime I should like to have the pleasure of delving into the folk-lore of these people, which I am sure must be very rich.

Speaking of richness reminds me that the islands are developing rapidly in material wealth, and if I had the space I could astonish my readers with some statistics. But upon this question I must content myself with an allegorical reference to it by quoting a current expression in Honolulu to the effect that this city is the

richest in the world because it has a "Diamond Head," a "Pearl Harbor," the largest "Punch Bowl" in the world, and the "Cokes" are all millionaires. Can you beat that?

I promised in a previous chapter to say something in particular regarding Diamond Head. This is a high promontory overlooking the entrance to the harbor like nothing else in the world so much as it is like Gibraltar. On the way over I had heard disquieting rumors from several of the passengers regarding the likelihood of Japan



Native Hawaiian Type.

making a move to capture the Hawaiian Islands. It was solemnly stated that she was surreptitiously getting a lot of her people on the island for the ostensible purpose of engaging in trade but in reality to assist her internally as she struck externally, and that it was merely a matter of time when this strike would be made. All this was discomfoting to me because I have always looked upon the Hawaiian Islands as the most significant vantage point on the Pacific. So in the brief time I had at my disposal I enquired into the situation, and I am prepared to state that if any one thinks

your Uncle Samuel is sitting there on the Island with his hands folded and dozing the happy hours away he is much mistaken. If the Islands are the significant thing on the Pacific, then Diamond Head is the significant thing on the Islands. It holds the key to Honolulu, and woe betide the foolish fleet that attempts to gain an entrance with that fort frowning down upon it. Diamond Head is an extinct crater and lends itself to the purposes of defense in a most admirable way. I cannot here go into the details of what



Old Native House, Hawaii.

the government has done at this point in the way of preparation—except to say that every rod of space on that harbor has been carefully charted, and the gunners, from signals, can drop a shell into any required spot at a moment's warning. It would take a pretty fight to dislodge the United States today—a fight which I hope in the interests of humanity may never come.

Assuredly no one in Honolulu wants trouble. They are all living there together, Japs and all, as peaceably and harmoniously as any body of people I have ever seen. I believe there is a greater mixture of nationalities there than in any place of similar size on

the globe, and there is less class distinction. Shade of skin seems to cut no figure, and they give one the impression of being a big happy family. To have this marred by war would be the essence of cruelty, and I trust that the good sense of those concerned will never precipitate such a blunder. And yet, let me say that while I am temperamentally and fundamentally opposed to war, while I abhor it as the most loathsome of all the cankers of our incomplete civilization, if I were the United States I would fight till every dollar of treasure was spent and the last drop of blood was spilled before I would yield up a jot or tittle of those precious possessions. So far as I am concerned Japan may take the Philippines and put them in her pocket, but when it comes to these Pearls of the Mid-Pacific—hands off! my hearties—hands off! C. N. J.

(To be continued.)

BOOK REVIEWS.

SURGERY AND DISEASES OF THE MOUTH AND JAWS. A Practical Treatise on the Surgery and Diseases of the Mouth and Allied Structures. By VILRAY PAPIN BLAIR, A. M., M. D., Professor of Oral Surgery in the Washington University Dental School, and Associate in Surgery in the Washington University Medical School. With 384 illustrations, 638 pages. Price, \$5.00. Published by C. V. Mosby Company, St. Louis, 1912.

The author of this book claims that, "The ordinary standard of surgical treatment given to diseases and deformities of the mouth does not equal that attained in other regions," and attributes this largely to the fact that there has been "a rather general lack of reciprocity of ideas and observations between constructive workers in the medical, with those of the dental professions."

However true this may have been in the past, the fact is apparent now that there is an awakening on the part of medical men and dentists, and both are recognizing, as they never have before, the community of interest which lies between them. More and more frequently do we find requests for consultation between medical men and dentists, and the coöperation of the two is bringing about better service to the people.

This book, written by a medical practitioner, will prove another

potent factor in bringing closer together the members of the two callings and will do a great and lasting good in this respect. This is aside from the intrinsic merit of the book itself. Dr. Blair shows great ingenuity and originality in his surgical management of some of the difficult and unusual maladies found in the face and jaws. This is particularly true of ankylosis of the jaw, in the treatment of which he demonstrates some radical, and apparently very successful procedures. Dr. Blair is evidently a bold but a very painstaking operator, and his description of the methods he employs carries conviction with it. We cordially commend the book to the consideration of every one interested in the subject, and can promise them a treat in perusing its pages.

EXTRACTION OF TEETH. By J. H. GIBBS, F. R. C. S., L. R. C. P., L. D. S. (Edin.), Dental Surgeon, Edinburgh Royal Infirmary; Lecturer on Dental Surgery and Pathology, Surgeon's Hall, Edinburgh, etc., etc. 163 pages. Price 7/6. Published by E. & S. Livingstone, Edinburgh, 1912.

This is the work of a very original thinker, and one who has undoubtedly had an extended experience. His consideration of the apparent defects in many of the forceps of the day will well repay reading by any operator who is called upon to extract many teeth, and one can not read this portion of the work without being impressed with the good common sense displayed by the author. There are fifty-three illustrations, most of them original, and they aid greatly in making the text clear. In only two minor particulars would we make a friendly suggestion for future editions. The nomenclature is not in accordance with the most modern acceptance, such terms as "facial" surface of a tooth, "canine" instead of cuspid, "milk" teeth for deciduous, etc., having no place in a work of this splendid character. Then again the recommendation to use peroxide of hydrogen as a mouthwash following the extraction of teeth may well be criticized. The author states that, "Whatever value it may have in virtue of the nascent oxygen that is liberated, is greatly increased by the bubbling which renders it a great mechanical cleanser, expelling food and other debris laden with bacteria from the sockets." This same "bubbling" may do infinitely more harm than good by carrying the bacteria into the sockets and tissues be-

yond, thus increasing the possibility of infection. At best the effervescence caused by peroxide of hydrogen is not conducive to the most rapid healing of the wounded parts, and the safer procedure is to keep this agent out of all sockets.

The book is so valuable that these two items are pointed out merely with the object of improvement in subsequent issues.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 55 State Street, Chicago, Ill.)

To Clean Carborundum Stones:—If the carborundum stones do not cut well after they are used a while, hold them over a gas burner for a few minutes then drop them in water; the clot holes of the stone will open and it will cut better.—*Michael Diratsouyan, D. D. S., Smyrna, Turkey in Asia.*

To Roughen or Etch Gold Inlays:—Dip the part, to which the cement is to adhere, in mercury being sure the surface is evenly coated, by using a moist piece of cotton and spreading the mercury around. When this has been accomplished invert the inlay over an alcohol flame and slowly drive off the mercury leaving a rough surface for cement to adhere.—*Ralston I. Lewis, D. D. S., Chicago, Illinois.*

Unnecessary Pain During Dental Operations:—Keeping a patient several hours under a severe nervous strain should be tabooed; one-half hour in severe cases should be the maximum; patients have undergone nervous strain and fatigue by protracted dental operations from which it has taken them weeks to recover, and the memory of such an experience will never be forgotten.—*W. E. Tennant, D. D. S., Fond du Lac, Wis.*

Lead as a Root Filling:—Lead is more easily tolerated in contact with the periosteum or other sensitive tissues than any other material. That it is by far the best material to use because of the absolute certainty of exactly filling the enlarged canal to the end and no more, a thing impossible to accomplish in any other manner. This fact makes the saving of perforated teeth comparatively easy and facilitates the treatment of alveolar abscesses of whatever nature by permitting a free opening of the foramen for such treatment without fear of subsequent trouble after it is closed.—*J. H. Spaulding, D. D. S., Paris, France.*

Nitrous Oxid and Oxygen:—The use of nitrous oxid and oxygen as a means of lessening the dread of dental operations, and as a means of rendering many, in fact nearly all, of these absolutely painless should be encouraged by the profession. The American Medical Association at its recent session held in Atlantic City a few weeks ago declared itself in favor of this anesthetic for major operations. This is significant of the trend of the times, and, moreover, is a deserved compliment to the worth of the dental profession by the most generous thought of the medical profession.—*Henry L. Banzhaf, B. S., D. D. S., Milwaukee, Wis.*

Be Patient with Children—The child's horror of a dentist's office will disappear if the dentist be kind, sympathetic and truthful with the child. Never tell to child you are going to put some medicine in his aching tooth and extract it, or tell him that this operation will not hurt him and then give him excruciating pain. Be patient with the child, never tie or hold him down to perform certain dental operations, reason with him as you would with a full-grown person and you will succeed to persuade eighty per cent of the children, because children are men, they have self-respect, feelings of pain and pleasure, beside the sensation of pain in a child's aching tooth is twice stronger, the pulp of his tooth being larger.—*Michael Diratsouyan, D. D. S., Smyrna, Turkey in Asia.*

To Polish Fillings and Clean Teeth:—I met a dentist who claimed he has practised dentistry for thirty-three years, but failed

to obtain his name. He suggested to me a simple, but what proved to be an excellent polisher of gold and amalgam fillings, and can be used to good advantage in cleaning the teeth, without injury to the soft tissues.

Taking an old inverted cone bur, while it is revolving in the engine, wind cotton around it in sufficient thickness so bur will not cut through cotton. Dip in a solution of pumice and water for polishing amalgam fillings and cleaning the teeth. For gold inlays and fillings it can be dipped in prepared chalk and water.—*Fred Schwartz, Senior Student Northwestern University Dental School.*

A Good Tooth Powder:—A good tooth powder must be so prepared that it is capable of cleansing and polishing the enamel without danger of scratching its surface. It must be free from grit, pumice or too hard and coarse substances, which may take the gloss off the enamel, render the surface of the tooth dull, more liable to take a grayish tint and get easily stained from any cause. It would then require a strong powder to make it whiter, producing at last mechanical abrasion from the wear of the enamel layer badly injured, and so far as we know, that is one part of the body that is not repaired of itself, and once destroyed is gone forever.

It must be antiseptic, astringent, stimulating and alkaline.

The department of health of the city of New York has issued the following formula sent to the parents of all public schools with other oral prophylaxis directions:

Thoroughly mix: Powdered precipitated chalk, 60 gr.; powdered castile soap, 15 gr.; powdered orris root, 3 gr.—*Geo. A. Roussel, D. D. S., Paris.*

Nine Reasons for Using Paraffin as a Root Filling:—Hard paraffin, having a melting point of 56-58° C. (133-136° F.), with the addition of 30 per cent of bismuth trioxid and 2 per cent of thymol possesses the following qualities as a root canal filling material:

First. It is non-putrefactive.

Second. It is sterile and slightly antiseptic.

Third. It is easily introduced.

Fourth. It is absolutely non-irritating to the soft tissues; when forced beyond the foramen of a temporary or permanent tooth or through a perforated root, it is borne by the soft tissues without the slightest reaction.

Fifth. It does not discolor the tooth structure; it possesses a distinct yellow tint which makes it readily discernible to the eye.

Sixth. It is non-porous and unchangeable; it produces an absolute permanent water-tight filling.

Seventh. It is easily removed.

Eighth. It will seal hermetically the dentinal tubuli and the foramina against bacterial invasion.

Ninth. It is opaque to the Roentgen rays.—*Herman Prinz, M. D., D. D. S., St. Louis, Mo.*

A File Brooch:—Use worn out barbed broaches, clip off barbed end that the fine end may not be too long. Have a new No. 3 gold file and place broach upon a hard, smooth, wood surface, bone is better, and with considerable pressure push file, rolling broach underneath it which at once makes a miniature file of the fine end. This little instrument is of great value in enlarging small root canals by just filing, eliminating all danger of breaking broaches in root canal work and leaving no excuse for not reaching the apex of any root. You might discover that some root canals travel a longer route than they used to seem. Vary the sizes, then follow with twist broaches. Where a broach has been broken off in a canal, file around it, flood canal with Buckley's Eucalyptol Comp., it is a good lubricant and will aid in removing broach end. When in doubt as to broach end being in the canal a sure test is to place cotton, dipped in oil of cloves, in the canal, its contact with steel will turn it blue-black in a short time.

A long, smooth broach rolled under the file will carry cotton to the apex and return. To remove old gutta percha root fillings flood with Buckley's Eucalyptol Comp., begin filing with broach, you will work through in a "jiffy" and discover where the other fellow or yourself fell short in the effort.—*George Mack, D. D. S., Chicago, Ill.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

APPOINTMENT.

Charles H. Oakman, D. D. S., M. D., a member of the Detroit Board of Health, was appointed Oral Surgeon to Harper Hospital on December 18, 1912.

ALUMNI ASSOCIATION.

The seventh annual meeting of the Alumni Society Dental Department Marquette University, will be held at the Milwaukee Auditorium, January 23 and 24, 1913, to which all ethical dentists are invited. C. T. Rosenbaum, Secretary.

DR. L. P. HASKELL.

Dr. Haskell authorizes us to announce that he will attend local society meetings not too far distant in the State and give an informal talk on artificial dentures, with a collection of models of peculiar and difficult cases upon which successful dentures have been constructed.

• ST. LOUIS DENTAL SOCIETY.

At the December meeting of the St. Louis Dental Society the following officers were elected for the ensuing year: Dr. Otto J. Fruth, president; Dr. Frank Rodgers, first vice-president; Dr. H. F. Hageman, second vice-president; Dr. G. B. Winter, secretary-treasurer; Dr. Virgil Loeb, librarian.

DR. A W. McCANDLESS.

Dr. McCandless, who for many years has practised in Chicago, has been obliged, on account of his wife's health, to leave the city; and has moved to Davenport, Iowa, his old home. He has left here a wide circle of friends who will miss him, but he goes back to as many in Davenport, where he formerly lived. It is hoped that the health of Mrs. McCandless will soon be fully restored.

CORRECTION.

In the article of Dr. H. G. Fisher, in our November number, page 1069, the last paragraph should read: "On the labial puncture the mucous membrane, about $1\frac{1}{2}$ centimeters below the free margin of the gum or where the fold of the lip begins, just mesial to the cuspid root, and push the needle downward and slightly forward 1 centimeter, keeping the needle at the start away from the bone, so as to avoid the concavity in this region when the point of the needle disappears 1 centimeter," etc.

AMERICAN DENTAL SOCIETY OF EUROPE.

The fortieth annual meeting of the American Dental Society of Europe will be held at Easter in Florence, Italy. All members of the profession are cordially invited to be present. Florence is one of the most interesting cities of Europe and Easter is the most favorable time of the year for seeing Italy.
Pariser Platz 7, Berlin, Germany.

DR. GEORGE H. WATSON.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Indiana State Board of Dental Examiners will be held in the State House at Indianapolis, beginning Monday, January 13, 1913, and continuing four days. All applicants for registration in the State will be examined at this time. No other meeting will be held until June, 1913. No temporary permits are issued. For further information address the secretary, F. R. Henshaw, 508 K. of P. Building, Indianapolis.

NATIONAL RELIEF FUND COMMITTEE.

Some few noble spirits have already set the example by sending on to the committee their first assessment. This encourages us to come to you and ask if you will join this generous few, and agree to give annually a small sum to the relief fund. This is not to be "something thrown away, never to be heard of again," but it is going to create a fund to insure our members against want in sickness and old age. You may yourself become a beneficiary, or may live to see it help some dear professional friend in time of distress.

Will you, then, send us your name and the sum you are willing to contribute, or will you not save time and correspondence by enclosing your check at once for the first annual payment?

Make your check payable to H. B. McFadden, of Philadelphia, treasurer of the National Dental Association. You may rest assured the distribution of the relief fund will be in the hands of those who will thoroughly investigate all applications for help. Every precaution will be taken to guard the funds and utilize them for no other purpose than the relief of worthy dentists.

Will you not ask your professional friends to join you in this movement?

Will you not lend us your aid and influence to get our plan adopted by your state society?

Will you not call upon the members of the profession in your city and request them to contribute what they can? Will you not advise us, giving names of those you call upon, saving us further correspondence and them future annoyance?

Fraternally yours,

L. G. NOEL,
EDWARD S. GAYLORD,
W. T. CHAMBERS,
National Relief Committee.

DEATH OF DR. A. H. FULLER.

We take the following funeral notice from the *St. Louis Daily Globe-Democrat* of October 24, 1912. Dr. Fuller was one of the old reliables of dentistry and for many years was closely identified with educational and association work in the profession. His death leaves another conspicuous vacancy in the rapidly-thinning ranks of that sturdy band of pioneers who did so much to give dentistry a status in the great Middle West, and he will be greatly missed by those of his associates who still remain:

The funeral of Dr. Albert H. Fuller, 71 years old, retired dentist and civil war veteran, who died Tuesday night, will be at 3:30 o'clock this afternoon from the family home, 4004 Delmar boulevard, to the Missouri Crematory. The funeral will be under the auspices of Ransom Post G. A. R., whose members will act as pallbearers. Rev. Dr. Thomas H. Hagerty will conduct the services. The honorary pallbearers will be Dr. G. A. Bowman, Dr. C. W. Kennerly, Dr. Alfred Trigg, Dr. John G. Harper, Dr. R. H. Mace, Dr. Stephen H. Voyles and B. Van Blarcom.

Dr. Fuller was a native of Massachusetts. He came West in 1855 and

settled in Warsaw, Ill., and in 1862 enlisted as a private in the One Hundred and Eighteenth Illinois Volunteer Infantry, with which he served throughout the civil war, and was mustered out with the rank of quartermaster's sergeant. In 1872 he was graduated from the St. Louis Medical and Missouri Dental colleges. He retired five years ago.

Dr. Fuller was for twenty-nine years professor of operative dentistry in the Washington University Dental College, of which he was dean for two years. He was a former president of the Missouri State Dental Association, the St. Louis Dental Society and the St. Louis Society of Dental Science. He was also a former treasurer of the American Dental Association and a member of the Illinois State Dental Society, the Iowa State Dental Association, the Missouri Historical Society and the New England Society.

Dr. Fuller was married in 1874 to Miss Mary E. Darst, who survives him, with their three children—Alfred Darst, Homer Albert and Miss Helen Julia Fuller.

Wherever the term "Extension for Immunity" has been used, the men have instantly grasped the meaning conveyed and they have had their faculties awakened to such an extent, from the impression made, that greatest good has resulted.

With the use of Extension for Immunity, the foolish as well as useless contentions, that for twenty or more years have gone on and on, should at once come to an end, for only a most ignorant man would dare attempt a controversy about the necessity for applying Extension for Immunity principles.

E. K. WEDELSTAEDT.

N. Y. Life Bldg., St. Paul, Minn., Nov. 10, 1912.

CORRESPONDENCE.

A NEW TERM.

To the Editor of the DENTAL REVIEW:

Before me lies a dental journal which contains an essay that is quite interesting from the number of peculiar ideas as stated by the writer.

"Extension for Prevention" is commented on in a way that at once shows that the writer is not only wholly but absolutely ignorant of what is meant by principles of "Extension for Prevention." The writer of this essay is like many other men in the dental profession, he also has only visionary ideas regarding something he knows nothing about, but he surely has as great an imagination as it is possible for man to have. Imaginations may be all very well but it is far better to know things, and know why you know them, than it is to rush into print about something that a person has not even a conception of.

On account of just this attitude, months ago I coined, used and shall continue to use, in my talks and lectures, this term, "*Extension for Immunity*." It at once does a number of things.

It is an understandable term. We at once can point to a margin that is immune and free from bacterial invasion, or else to a condition which is inviting bacterial invasion. It is the simplest of all terms for the purpose intended. All operations that are made in the various surfaces of the human teeth are either so made as to be free from bacterial invasion or they are made so as to invite bacterial invasion.

THE DENTAL REVIEW.

Vol. XXVII.*

CHICAGO, FEBRUARY, 1913.

No. 2

THE SURGERY OF THE TONSILS AND ADENOIDS.*

BY TRUMAN W. BROPHY, M. D., D. D. S., LL.D., CHICAGO.

Strictly speaking, the tonsils and adenoids are dealt with by the laryngologist or rhinologist, but it is of vital importance to the oral surgeon to become familiar with the pathological processes to which the tonsils are subject and the various phases of tonsil surgery.

There is but little question that the tonsils play a very important part in the causation of many diseases of the mouth as well as elsewhere in the body, and that in treating abnormalities of the oral cavity, the presence of an infected tonsil or adenoids places a serious barrier in the way of procuring a clean field, practically speaking.

It would seem almost criminal neglect to attempt a cleft palate operation on a patient who has furrowed septic tonsils or a mass of adenoids. In fact, an operation requiring a general anesthetic is made distinctly more serious by such a condition. It would seem only reasonable then that the tonsils should be carefully examined in any condition not well understood and if necessary, receive attention before any operation on the mouth or adjacent parts.

THE TONSIL.

The faucial tonsil is located between the anterior and posterior palatine arches, and consists of lymphoid tissue with more or less interstitial connective tissue. The surface is covered with stratified epithelium. Normally, there are present from ten to twenty crypts which penetrate the gland and empty on the surface. These crypts are subject to many pathological changes due to infection and subsequent degenerative changes of the cells with the deposition of a detritus.

The tonsil is very vascular, being supplied by the tonsillar and palatine branches of the facial artery, the ascending pharyngeal

*Read before the Odontological Society of Chicago, October, 1912.

artery, the descending palatine branch of the internal maxillary, and a branch from the lingual artery. In a state of chronic inflammation one or more of these vessels may be much enlarged, leading to severe hemorrhage when the tonsil is removed.

Tonsillitis may be described under the following heads: Acute and Chronic.

Among the classes of acute tonsillitis are:

Acute follicular tonsillitis (retention tonsillitis).

Acute diffuse tonsillitis (parenchymatous).

Peritonsillar abscess (Quinsy).

Chronic Tonsillitis:

Tonsillar hyperplasia.

Calculus of tonsil.

Malignant Growths:

Carcinoma.

Syphilis.

Tuberculosis.

Cysts.

ACUTE TONSILLITIS.

The acute inflammations of the tonsils may be divided into three classes: Simple catarrhal, follicular or retention, and diffuse parenchymatous tonsillitis.

ACUTE CATARRHAL TONSILLITIS.

Etiology: The exciting cause of an acute catarrhal tonsillitis may be any one of many bacteria which are practically always present in the mouth, and only require some predisposing factor at work to bring about an invasion of the tonsil with the subsequent formation of the diseases. This type of tonsillitis is usually caused by the staphylococcus, the less virulent strains of the streptococcus, the influenza bacillus, or a mixed infection.

Among the predisposing factors, rheumatism, or rather rheumatic diathesis, plays an important role. Here may be considered the fact that rheumatism, in all probability, is an infectious disease, the origin of infection being the tonsil.

Much experimentation has been carried out along this line on the lower animals, by injecting tonsillar tissue, and producing an acute arthritis. This is by no means proof, as streptococci as a rule have a tendency to affect serous surfaces (Ricketts). If the arthritis is simply a toxic affair the focus from which absorption takes place may be an infected tonsil. It is usually the recurrent type of infec-

tion of a tonsil, causing repeated toxemias, where the patient develops sooner or later an arthritis or an acute endocarditis or a pleurisy.

Acute tonsillitis is most frequently encountered in the spring or autumn months, during damp, rainy weather. Sudden changes in temperature, exposure to draughts or living in poorly ventilated houses, has a distinct bearing on its causation. One attack of tonsillitis predisposes to subsequent attacks. This disease is found most frequently in children and young adults up to the age of thirty-five.

An acute catarrhal tonsillitis at times accompanies other diseases, especially one of the acute infectious diseases. The probability is that it is a secondary infection from the mouth due to the lowered resistance of the patient. The tonsillitis of scarlet fever is at times of a very virulent type and is in all probability due to the streptococcus.

Tonsillitis may be a sequel of any inflammatory process of the mouth which terminates in suppuration.

Infections from diseased teeth, from aphthous ulcers, alveolitis, or general stomatitis may, by continuity of the surface of the membranes, extend into the crypts of the tonsils and thus cause an infection.

Symptoms. In this type of the disease, the patient usually complains of a sore throat, with headache. The fever may run from a slight elevation to 102 to 104° F. The pulse is increased in proportion to the fever. The patient may have attacks of nausea and vomiting but this would lead one as a rule to suspect diphtheria. On examination, the tonsils are injected and swollen, the inflammatory process extending over the pillars of the fauces to the posterior pharyngeal walls, and to the uvula and soft palate, the latter causing the sensation of rawness and pain on swallowing.

Quite frequently the patient complains of severe body pains, especially in the legs and back. Occasionally a severe and prolonged headache is the patient's only complaint.

Treatment. If the patient is at all septic, he should be put to bed and placed on the so-called anti-rheumatic treatment. Quinine to the point of chinchonism at times gives good results, especially in the pneumococic infections. The one class of drugs giving the most uniform good results are the salicylates.

Salicylate of soda, given in twenty-grain doses every three or four hours, until ringing in the ears is produced, has a distinct effect upon the course of the disease. It should be given in a solution along

with some digestive mixture to prevent the nausea and acute gastric distress. Aspirin in combination with salol has very beneficial results. Oil of gaultheria, in ten-drop doses, given in capsules every three hours, has a decided effect on the disease.

The patient's bowels should be kept freely moving and nothing better can be used than a drachm of sodium sulphate and twenty grains of sodium citrate, given every morning in hot water. The patient should be allowed to drink freely of lemonade in which cream of tartar, drachms 1 to the glass has been dissolved.

For local treatment, a slightly astringent alkaline gargle will relieve the distress and cleanse the oral cavity of mucus and foreign material. Hot normal salt solutions are very efficient at times. When the throat is very sensitive, as when there is an associated acute pharyngitis, a spray should be used instead of a gargle, the latter causing pain and often inducing vomiting.

The disease usually runs a course of from two to six days, irrelative of treatment.

ACUTE FOLLICULAR TONSILLITIS (RETENTION TONSILLITIS).

This type of infection differs from the catarrhal in that the crypts of the tonsil fill up with a detritus, consisting of broken-down cells, bacteria and leucocytes. The pneumococcus quite frequently causes this type of infection. One tonsil is usually first infected, and after a few days the infection spreads to the opposite side.

On inspection the tonsils are large and acutely congested. Numerous white or dirty grayish caseous plugs can be seen protruding from the surface of the tonsil and often an exudate in the form of a membrane can be seen spreading over the surface of the tonsil to the pillar of the fauces. This membrane is often quite adherent to the tonsillar tissue, strongly suggesting a diphtheric infection. The differential diagnosis lies in the bacteriological examination.

The disease is often ushered in by a chill, followed by a high fever and rapid pulse. The patient is usually quite septic and complains of a severe headache and pains in the back and legs. Complications are very prone to appear at this time, and one must be constantly on the lookout for a pericarditis, an endocarditis, transitory arthritis and pleurisy. The patient is often markedly prostrated and may develop a low grade delirium.

In this form of tonsillitis, even after apparent recovery there at times remains a crypt which contains quiescent but virulent bacteria, which may at any subsequent time become active and cause a

re-infection. This is the tonsil which is a source of danger to the patient and eventually leads to a chronic hyperplastic tonsil which demands prompt removal.

Treatment. The treatment of this condition is practically the same as that of the acute catarrhal type, except that local applications of such preparations as equal parts of liquid guaiacol and glycerine, or equal parts of tincture of iodine and glycerine, are beneficial. Emptying the crypts by gentle pressure will relieve the toxæmia by draining the tonsil.

ACUTE DIFFUSE TONSILLITIS (PARENCHYMATOUS TONSILLITIS).

This form of the disease is characterized by an enormous swelling of the tonsils. There is often a marked edema of the pillars and the uvula, and a slight exudate may appear on the tonsils. The patient complains of severe pains in the region of the tonsil which makes swallowing next to impossible.

This condition frequently leads to peritonsillar abscess. The patient is profoundly toxic and due to the severe grade of infection and the tendency to edema, one must be constantly guarding against the possibility of an edema of the glottis. Myocardial changes are prone to develop, due to toxæmia.

Treatment. The treatment is the same as in the other forms of the disease. When edema of the glottis threatens, cold applications to the throat, and possibly intubation. Tracheotomy should be done if relief is not immediately procured.

PERITONSILLAR ABSCESS (QUINCY).

Coincident with a tonsillar infection, the bacteria may enter the peritonsillar tissues causing a peritonsillitis. This may be simply an inflammatory process which resolves with the deposition of some fibrous tissue, or it may continue to form an abscess. A peritonsillar abscess usually follows a follicular or a perenchymatous tonsillitis. In about 90 per cent (Coakley) of the cases, the infection spreads external to the tonsil into the loose connective tissue and then extends upward and inward into the soft palate. In the remaining cases the process extends into the lateral oropharyngeal wall or into the tonsil itself.

Symptoms. The onset, due the associated tonsillitis, has a symptomatology practically identical with the latter condition, except that it may be more severe. The abscess formation is usually manifested by a chill followed by a fever. Due to the swelling of the parts, the

patient complains of great pain and difficulty in swallowing. Within twenty-four hours, there may be great difficulty in opening the mouth.

There is dribbling of saliva from the mouth and the patient is unable to take any food. Due to this starvation and the severe drain on the body by the toxæmia, the patient is prostrated and rapidly loses weight.

An examination is often difficult, due to the fact that the inflammation prevents the patient from opening his mouth. An anesthetic may be required in order to open the mouth. The tonsils will at times be completely hidden by the swollen pillars and peritonsillar tissues. The crypts often are found filled with a caseous material. The uvula is edematous and elongated and often points toward the affected side.

A marked bulging can be seen at the junction of the anterior pillar and the soft palate, which early is hard but later may show a soft area. The surface of the pillars and palate is a vivid red, or a purple discoloration.

Treatment. Just as soon as a diagnosis of a peritonsillar abscess is made, drainage should be established, even though no fluctuation can be detected and there is as yet no accumulation of pus. The bleeding will relieve congestion and the opening form an avenue of decreased resistance where the abscess may discharge itself.

If the mouth cannot be opened sufficiently wide, a gas anesthetic should be given; otherwise the local application of a one per cent cocain solution in adrenalin solution 1-1000 will suffice.

A sharp-pointed bistoury can be used, the incision carried from a point about three-eighths of an inch from the inner margin of the anterior and a little above the junction of the soft palate with the uvula, downwards. It is well to guard the knife so as not to cut too deeply. If pus is evacuated, a small gauze wick should be inserted in the wound so as to keep the edges separated. This should not be packed in tightly, as in that case it would interfere with proper drainage. The drain should be removed in twenty-four hours. The mouth should be kept clean with some slightly antiseptic mouth wash, and the patient put to rest.

A patient who has once had a peritonsillar abscess, is very liable to have a subsequent attack, in the event of a tonsillitis, consequently it is well to carefully examine the tonsils and if found diseased, they should be removed.

ADENOIDS.

Adenoids are a lymphoid hyperplasia of the follicles on the posterior wall of the naso-pharynx.

Etiology. This condition is found in children from the ages of two to ten years. The exact cause is not definitely known, but it is very apparent that adenoids are frequently associated with diseased tonsils and changes in the nose, such as infected turbinates, spurs of the septum and nasal polypi, and it is only fair to presume that due to the continued irritation of infective material coming in contact with the lymphoid tissue, causes it to become hyperlastic.

Acute infectious diseases, such as scarlet fever, measles and whooping cough, due to their almost specific action at times on the mucous membrane of the nose and throat, are predisposing elements in the causation of this disease.

In the condition known as "staticus lymphaticus," are found tonsillar hypertrophy with adenoids along with a generalized lymphatic hyperplasia, often a persistent thymus gland. These patients are quite often anemic, in a poor state of nutrition, and subject to syncopic attacks. A poor cardio-vascular system seems to be a basic element.

Normally, there are present in the posterior nares lymphoid follicles, any or all of which may become hyperlastic, the latter causing a peculiar formation called adenoid vegetation. After this simple hyperplasia has existed for some time and caused a low vitality of structure, an infection takes place and the patient complains of more or less discharge from the nose or dripping down into the throat.

Symptoms. The symptoms have been taken up more or less in detail under the topic of tonsillar hypertrophy. Many obscure conditions, such as convulsions, nocturnal aneurisis, epileptic attacks, and asthma have been attributed to the presence of adenoids. There is no question but that a nasal obstruction has a distinct impairment on a child's health. The continued presence of infection in the posterior nares leading to Eustachian tubal catarrh causes middle ear disease.

The obstructive symptoms are most pronounced between the ages of two and six years, and then, as a rule, due to the atrophy of the lymphoid tissue the condition improves, but only after certain permanent pathological conditions are established as above named.

Treatment. It is always well to determine whether a child has

adenoids at the time a tonsillectomy is done, as both may be removed at the same time. There is no question but that complete removal of the adenoids is the only efficient treatment. The use of astringents at times gives temporary relief but never cures the condition.

The contra-indications to the operation are few, and lie chiefly in the danger of the anesthesia, in such conditions as "staticus lymphaticus," or the possibility of a severe post-operative hemorrhage in the hemaphiliac.

The child is anesthetized with ether and placed in a semi-erect position. A suitable gag is placed in the mouth, and the tongue pulled well out. A sharp curet, such as the Stubb's instrument, should be used, holding it as one holds a pen in writing.

The blade is placed well up in the naso-pharynx and against the posterior wall, care being taken not to carry up with it the tip of the uvula; a downward sweep is given the instrument by a simple flexion of the wrist, turning the handle of the instrument upwards. Often one stroke is enough to remove the entire mass; at other times several attempts will have to be made.

The hemorrhage is usually quite profuse, therefore the child should be placed face down, to prevent the aspiration of blood. This hemorrhage practically always subsides in a few moments. The pharyngeal vault should always be explored with the finger after an operation, to be sure that all the vegetation has been removed.

If the hemorrhage does not subside in a reasonable time, topical applications of a solution of tannic acid in glycerine and adrenalin chloride solution 1-500 may be tried. In the severe cases of prolonged hemorrhage the vault of the pharynx should be packed. This is done by passing a catheter through the nostril until the end is seen in the pharynx. The eye of the catheter is threaded with a stout silk thread and to the other end of this thread is fastened a gauze tampon of suitable size to fit.

The catheter is then withdrawn along with the silk thread. This will draw the gauze pack well into the naso-pharynx, and sufficient pressure can be procured by traction on the thread to completely and tightly occlude the naso-pharynx. This tampon should be left in from twenty to twenty-four hours.

Subsequent to the operation, the child's mouth should be kept clean, recovery being in from three to five days as a rule.

CONCLUSION.

In presenting this subject I have entered more deeply into a detailed description of the diagnosis and treatment of the abnormality considered than would seem necessary before a society of this character.

It has been with a view, however, to pointing out the intimate relationship of the pharyngeal walls with the more anterior portion of the oral cavity. Experience has taught us that an initial infection of the oral mucous membranes, by continuity of surface, may involve the nares, the accessory sinuses, and the pharynx; or that the oral membranes may be secondarily infected.

ORAL INFECTION IN RELATION TO SYSTEMIC DISEASE.*

BY WILBER E. POST, M. D., CHICAGO.

Within the last few years much new importance has been attached to the relation of focal infections to systemic diseases. The principal foci toward which attention has been directed are in the teeth and adjacent structures, the tonsils, the prostate gland, the uterus and its appendages, the vermiform appendix and the gall bladder. Infections in these foci are for the most part chronic, but may be acute. The relationship of the infections of the tonsils to arthritis and osteoarthritis, endocarditis and bacteremia has been thoroughly demonstrated clinically and experimentally by Billings,¹ Davis,² Rosenow³ and others. Similarly infections of the prostate are shown to cause neuritis, muscular rheumatism and arthritis; the appendix and the gall bladder is shown to be the source of general intoxications with malaise, headaches, muscular rheumatism and myocarditis.

It is not to be wondered at then, that the teeth and adjacent

*Read before the Chicago Dental Society, November 19, 1912.

1. Billings, Frank, "Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis." *Arch. Internal Med.* 1912, Vol. 9, p. 484. -

2. David, D. J. "Bacteriological and Experimental Observations of Focal Infections" *Ibid* p. 505. "Bacteriology and Pathology of the Tonsils with especial Reference to Chronic Articular, Renal and Cardiac Lesions." *Jour. Infectious Diseases* 1912, Vol. x, p. 148.

3. Rosenow, E. C. "Immunological and Experimental Studies on Pneumococcic and Staphylococcic Endocarditis." *Jour. Infectious Diseases* 1906, Vol. 6, p. 245.

structures, which are so often the seat of infectious processes, should be the source of systemic disease. The wonder is that a region so accessible for examination and investigation should have escaped so long with so little attention.

The fact is, that so much attention was given it early in medical development that specialists arose—dental surgeons. Their work became separated and the connecting link between doctor and dentist was largely forgotten. Likewise the relation between oral infections and general diseases was largely lost sight of until recently when, in the process of applying the modern science of diseases, the connecting link is being revealed.

The field of our own observations includes about three hundred cases in the Central Free Dispensary at Rush Medical College, many cases at the Presbyterian Hospital and others in private practice. The common lesions have been caries of the teeth, pulpitis, pyorrhea alveolaris, alveolar abscess, periostitis of the jaw, and osteomyelitis of the jaw. The associated conditions apparently or actually resulting from these infectious processes may be divided into two classes, the regional affections and the general systemic affections. The former includes stomatitis, lymphadenitis, cervical abscess, infections of the maxillary sinus and the salivary glands (leading later possibly to salivary calculus), pharyngitis, bronchitis, gastritis and occasionally infections of the eye or thrombosis of the retinal vein, and infections of the ear. The general affections include the general intoxications expressed in the neuroses, or neurasthenia, headaches, muscular rheumatism, neuritis, angioneuroses, anemia and such general infectious processes as bacteremia, pyemia, acute and chronic infectious endocarditis, acute and chronic myocarditis, aneurysm, arthritis and nephritis. We should also remind ourselves that almost all cases of pernicious anemia give a history of a troublesome soreness of the mouth, which seems peculiar to the disease. This list is striking in its length and serious in its content. When one considers with Dr. Gilmer,⁴ however, that twenty-five per cent of mouths have suppurating foci, is it at all inconsistent that the pathological results should be so many and so evil?

In reviewing the records of our dispensary cases one is struck by the great preponderance of acute alveolar abscesses. This seems to be due, first, to the fact that acute cervical lymphadenitis or

4. Gilmer, Thomas L. "Chronic Oral Infections" *Arch. Internal Med.* 1912, Vol. 9, p. 499.

cervical abscess results and the patients seek aid—not from the dental infirmary, but from the medical or surgical dispensary; and, second, it is far too true that the physician or surgeon fails to examine the teeth and their surroundings unless they cause the patient to complain. Many doctors have not yet learned to appreciate the relation of diseased teeth to general diseases. For this reason it would be more effective to address this remark, and others which I shall make, to our medical friends rather than to the members of this society. Among the records at the Presbyterian Hospital and among the records of our office patients the preponderance of lesions shifts to chronic alveolar abscesses, pyorrhea alveolaris, and pulpitis.

The regional affections resulting from infections in and about the teeth are more often apparent than the general affections. Probably anyone of you could draw from your records many illustrations of this class of complications. The discussion of these will, therefore, include only a mention of pharyngitis, bronchitis and gastritis. Pharyngitis results obviously either from direct infection through an imperfection of the mucous membrane or by an extension through the lymphatics. The latter would probably be the more common route when the streptococcus is the infecting organism, and the condition may become very painful and very serious. We might well look for the cause of a chronic pharyngitis or laryngitis with dry hacking irritative cough in an infectious process of some tooth. Within the last month a little boy (C. R.) six years old, was brought to the office for examination chiefly because of a slight irritative cough, occurring most often in the morning and evening. The child had a small appetite. The throat was red and dry. The nasal passages were free; lungs clear, but over the right upper incisor was the opening of a sinus from a chronic alveolar abscess from which several drops of pus were easily expressed. Three months previously an acute alveolar abscess on the left side had been drained. The chronic abscess was promptly attended to and the father reported yesterday that the cough had disappeared and the child had a great appetite.

Similarly a bronchitis and its complications may result from the aspiration of infective material from the mouth into the air passages or from extension through lymphatics. Especially in dispensary experience it is not infrequent that a patient complains of loss of appetite, fulness or distress after eating with some soreness across

the epigastrium. Upon examination a badly neglected caries of the teeth, or pyorrhea alveolaris or one or more alveolar abscesses are found. Our first advice in these cases is for the patient to have the teeth properly attended, then to observe the ordinary rules of hygiene.

Among the general affections resulting from infections in and about the teeth the three most frequent are neurasthenia, muscular rheumatism and neuritis. The three may be combined in one patient. When a person complains of being constantly tired, without energy or ambition, suffers from a dull bulging feeling in the head, sometimes from a soreness of one side of the head and mild mental depression, it is becoming more and more the common rule of physicians to search that patient carefully for a source of intoxication. This condition is associated with more or less muscular rheumatism, aching and soreness and stiffness of the muscles of the back or shoulders or neck.

In December, 1911, a business man (P. MacG.) 46 years old, came to the office for general examination on account of aching and transient pains in various parts of the body and a backache in the lower lumbar and sacro-iliac regions which he feared was due to kidney trouble. He had a dull headache at times, lacked his usual energy and suffered from general nervousness and restlessness and was easily worried. Appetite and digestion good; bowels regular. No urinary disturbance and no loss of weight. Hemoglobin, 80 to 90 per cent; urine, normal; blood pressure, 135 mm. Thorough physical examination revealed no pathological condition with the exception of a slight soreness of the right lower molar. The case was typical of mild neurasthenia and the attention of the patient was called to the importance of the condition of the teeth. It was suggested that his dentist make careful search of the teeth for a source of intoxication. None could be found. On January 8, 1912, the patient reported that he had quite a severe pain in the right side of the face and some soreness to pressure. On the following night the pain became more severe, face swollen, temperature 103° F. An oral surgeon was called. An infection had originated in the above mentioned right lower molar under a filling and had developed into an alveolar abscess and periostitis. Pus was evacuated and drainage established, and nine days later the patient reported that he felt better than at any time for a year.

Another case illustrates that muscular rheumatism may be the

prominent symptom. In 1906 a young man (W. E. P.) 30 years old, complained for several months of a lumbago so severe that after sitting at his desk for half an hour he would have difficulty in rising from his chair and standing erect. A dull right-sided headache was usually present in the afternoons and a general lassitude. Thorough examination failed to reveal the source of trouble. Later an attack of very severe neuralgic pain occurred which resembled closely an attack of tic douloureux, and on the second day of the attack a right lower molar became tender. The filling was removed and a well developed pulpitis, or gangrene of the pulp, was revealed. There has been no lumbago nor general toxic symptom since. This affords me the opportunity to make the observation that lumbago often results from pulpitis while neuritis more commonly results from alveolar abscess or pyorrhea alveolaris.

To illustrate further: A young man (Q. L. Y.) 27 years of age, entered the Presbyterian Hospital March 2, 1906, complaining of weakness of the muscles of the trunk and extremities. Five days previously one hand had become very weak; on the next day general weakness was manifested, especially in the legs, and on the following morning he was unable to get out of bed because of the loss of muscular power in the whole body except in the face and neck. Bladder and rectum normal. Temperature and pulse normal. On March 3rd, pain appeared in the hips and thighs and knees and legs. A right facial paralysis also occurred due to seventh nerve involvement. On March 7th left facial paralysis occurred due to involvement of the left seventh nerve. At this time the patient could not, therefore, close his eyes, smile nor pronounce the labial sounds. A right optic neuritis was demonstrated by ophthalmoscopic examination and marked lachrymation was present. The blood examination showed an hemoglobin of 82 per cent, reds 4,920,000, whites 13,500. The urine was normal. A chronic alveolar abscess above the right upper lateral incisor was found upon the first examination of the patient. Cultures of the pus were made and a large bacillus obtained. A rabbit was inoculated with this organism and a few days later the animal lost the use of its hind legs and finally died. Unfortunately the culture of this organism was destroyed so that no further study of its nature could be made. The abscess was freely opened and drained by Dr. F. B. Moorehead and the patient made a complete recovery from this severe form of multiple neuritis.

The bacteriological findings in a case examined in the office

of Dr. Billings are described by Dr. D. J. Davis.² "Young man has been suffering for several weeks with symptoms of a severe multiple neuritis, associated with some anemia, marked emaciation and slight fever. The joints were not involved and examination showed no heart lesion. For a long time the patient had been troubled with severe pyorrhea and at the time of the examination the gums of the lower jaws were red and swollen, bled easily and on pressure abundant pus exuded from between the teeth and gums. Smear and culture examination of this pus revealed, in nearly pure growth, many Gram-positive diplococci resembling pneumococci. . . . A blood culture yielded a pure growth of the same diplococci. . . . Unfortunately the patient did not remain long under observation and the termination is not known.

The active general infectious processes are strikingly shown in three cases of infectious endocarditis, studied by Dr. E. C. Rosenow. Through his courtesy we have the privilege of reviewing the records of these patients. H. F. M., man, 36 years old, was manager of a sales department for one of our wholesale firms. He was admitted to the Presbyterian Hospital on Feb. 14, 1908. He had first called a physician on Jan. 23, 1908—three weeks previously. At that time there was present a pharyngitis, rhinitis, myalgia, etc., and a diagnosis of "grippe" was made. The patient failed to improve, however, particularly in reference to temperature which gradually assumed a septic type. A few days later the spleen became palpable and a suggestion of typhoid was advanced. Subsequently a definite septic temperature, a loud mitral murmur, petechiae, etc., disclosed an infectious endocarditis. A blood culture showed apparently a staphylococcus. This was confirmed by a second culture made the day before the patient was admitted to the hospital. At the time of admission a swelling on the right side of the lower jaw was noted and upon questioning, the patient said he had suffered from a right-sided toothache for some time before coming into the hospital. It was later learned that on Sept. 26, 1908, there had been an ulceration from the root of the right lower first molar.* The crown had been removed and the infection apparently disappeared promptly, so the crown was replaced. At the time of admission to the hospital there was a periostitis in the region of this tooth which was loose. The blood showed an hemoglobin of 70 per cent, reds 4,392,000 and leucocytes 23,900. The urine contained a large number of pus cells, some red blood cells and large amount of nucleo and serum albumin.

*Cultures from this focus showed same staphylococcus.

His temperature was irregular, ranging from 100° F. to 102°. Pulse 88 to 104. The prostration was marked and death occurred Feb. 22, 1908, one week after admission to the hospital. This is a very unusual case due to the fact that endocarditis was due to staphylococcus.

Of Rosenow's other two cases of infectious endocarditis due to infections of the teeth one was in a young man 21 years old; the other in a man about 50. The organism isolated in both cases was the pneumococcus. In the former case the duration of symptoms of endocarditis was only fourteen days. Besides the acute endocarditis were metastatic abscesses, infarction of spleen and kidneys, and thrombosis of the left common iliac artery* and of the right femoral.

In the beginning of these remarks a long list of serious ills due to disease of the teeth was read. It may have seemed overdrawn to some. But do we have to find further evidence to convince one that the announcement is all too true, or to demonstrate how important is the function of the oral surgeon in modern medicine.* What is needed now is more intensive study on the part of more well trained workers in this wide field of investigation. Obviously the cooperation of dentist and doctor is very essential and just as certain is it that their combined efforts will yield gratifying results. The situation makes us realize more fully than ever the common ground of the dental and medical professions—to see that the dentist should have more medical education and that the physician should pay stricter heed to the pathology of a field previously too often overlooked. It suggests also the advantages of a closer relationship of dental and medical schools with each other and with institutions for the investigation of medical problems.

We cannot close our remarks without expressing our appreciation of those members of your profession who have spent extra years and much effort in preparing themselves to meet the higher demands of progress in these lines. We would pay special tribute to the work of Dr. Thomas L. Gilmer who for many years has recognized the broader significance of lesions of the mouth in human disease and worked almost alone in teaching both dentists and doctors the fundamental truths concerning those lesions and in stimulating others to closer study and better practice.

*We trust that more dental surgeons will become impressed with the duties and privileges devolving upon them when patients are referred to them in the attempt to trace disease to its source.

THE TECHNIQUE OF X-RAY WORK AS APPLIED TO
DENTISTRY.*

BY DR. EDWARD S. BLAINE, MILWAUKEE, WIS.

In taking up any subject which concerns X-Ray work, there are several things that will have to be borne in mind, and I shall briefly speak of a few of those. Since 1895, the year of the discovery of the X-Ray by Prof. Roentgen, of Würzburg University, a great many improvements have been made, but the fundamentals as laid down by Roentgen at that time in his research work were so thorough that none of the fundamentals have been changed, and I am going to speak of just a few of them. For instance, the X-Ray plate is a register of different densities, in proportion as each one of these portions vary from another. Therefore, one part being of a greater density will show white; that is, it will cause a greater hindrance to the ray than will the neighboring and surrounding structures. This was early applied to teeth. In fact, it was hardly a year after the discovery of the X-Ray that a dental picture was taken in Germany.

We do not see the X-Ray and we learn of it only through chemical and physical manifestations; chemical in that it acts on the haloids of silver which are held in suspension on a plate or film, and physically, by its property of causing the fluorescence of certain salts. This is commonly known as a fluoroscopic ray; the other is the photographic X-Ray. Now, what is a skiagraph? A skiagraph shows us the different degrees of density of any given field which is interposed between the X-Ray target and the film or plate. The interpretation of a negative is very important, and one main thing to be borne in mind is that the X-Ray is not a bundle of parallel rays, but emerges from one single point on the target, or the tube spreading fan-shaped, and it depends on the position of the object you are taking, whether it will be a distorted picture or whether it will give you normal sized shadows. The X-Ray is generated in a tube which has been exhausted to one one millioneth of the atmosphere. This is commonly known as the Crooks tube. The tubes, however, that we see today are far from the original Crooks tube, and are only similar in that it is exhausted to a very high de-

*Lecture delivered before the Wisconsin State Dental Society, July, 1912.

gree of vacuum. The position of the patient is very important for the reason that you will get distortion, if not careful, and failures often result. You will get a tooth that is two and three times as long as the normal tooth, if the tooth and the patient are not carefully placed, and it is our object to call your attention to just these main points that you yourself could apply if you have access to the X-Ray apparatus. Films and plates are used in dentistry, films being small plates in an opaque envelope and placed inside the mouth and the X-Ray tube directed toward the portion that you are endeavoring to take. Fluoroscopic dental appliances are in use, but they are rather impractical and not much used. The X-Ray is easily applied to dentistry, and it is rather strange that it is not more used by the average dentist. With the apparatus in use today brought down to a very high degree of perfection, the easy handling of these small high frequency machines lend themselves very readily to an office practice. This will be demonstrated a little later. Plates are used for the upper jaw and lower jaw cases where you want to get the entire region rather than just two or three teeth. If you are not careful in directing the ray you will get a superimposition of shadows, and a probable failure. You have to avoid the jaw near to the tube, because the plate, being placed at the side that you wish to take, will register its shadow the sharpest, and we make use of this fact by tipping the head one way or the other (which will be demonstrated) in order to have the shadow of this jaw thrown off the field. As to apparatus used it ranges from a small high frequency machine, such as is here, to a large high-powered so-called interruptless apparatus, and the machines between these two extremes are the ordinary induction coil, but these are more or less cumbersome, and are used more by the specialist who does a great deal of work, and are not so practical for the average dentist. Patients can be rayed in a dental chair very easily, having the coil on the table, which can be rolled up close or be stationary, right handy, and having flexible cords so as to allow for any adjustment of the tube. These high frequency coils are very easy to manipulate, there are no interrupters to bother with, and the coils are made for alternating or direct current, whichever current you have in your office, and have a low cost of upkeep compared with these other machines. The exposures are a little longer. It is practical, and it is done every day, to make a flash exposure with an interruptless machine, or a high grade induction coil while with a high

frequency coil, it is a matter of 10 to 30 in some coils. In others it takes 60 seconds or so, but you can yourself get high grade results with a little work. In order to illustrate what I mean by the distortion I am going to ask for the first plate to be thrown on (Fig. 1 shown on screen). The development of these films is comparatively simple. Any normal developer will develop them in 5 to 10 minutes, and they are fixed as usual in hypo and washed and dried. A number of these will be shown. (Showing several plates.) This is a diagrammatic illustration of the ray striking the tooth and film at such an angle as to avoid either lengthening or shortening. You see here is the shadow that results from this tooth being projected on a film right here, this being the film, and these the ray. This portion here does not show very much narrowing. These come from one point, and they diverge and strike this tooth here and here. This will be the result if you have properly placed your tube.

(Next plate shown.)

This shows the result if the tube be placed up too high. The target of the tube has been placed higher up and that would throw the tooth down here, and we will get a shortening because the result is nothing but a skiagraph, a shadow, and the distance from here to here will correspond to here, and that is what you must avoid. The next plate will show the result of having the tube placed too low. This is too low, therefore you get a long tooth rather than one as I attempted to illustrate before. I am going to read you something from the admirable articles in *Items of Interest*, by Dr. Roper, of Indianapolis, on "X-Ray in Dentistry," which will conclude my talk. According to Dr. Roper:

(Reading.)

"The radiograph may be used in the following cases:

(1) In cases of delayed eruption, to determine the presence or absence of the unerupted teeth.

(2) In cases where deciduous teeth are retained long after the time when they should have been shed, to learn if the succedaneous teeth be present.

(3) To learn if the roots of children's teeth be fully formed.

(4) To determine when to extract temporary teeth.

(5) To determine whether a tooth be one of the primary or secondary set.

(6) To show the orthodontist when he may move the coming permanent teeth by moving the deciduous teeth.

- (7) To observe moving teeth.
- (8) In cases of supernumerary teeth.
- (9) In cases of impacted teeth as an aid in extraction.
- (10) To determine the number of canals in some teeth.
- (11) As an aid in filling the canals of the teeth with large apical foramina.
- (12) To learn if canals are open and enlarged to the apex before filling and to observe the canal filling after the operation.
- (13) To determine whether an opening leading from a pulp chamber be a canal or a perforation.
- (14) In cases of pulp stones (nodules).
- (15) In cases of secondary dentin being deposited and pinching the pulp.
- (16) To learn if the filling in the crown encroaches on the pulp.
- (17) In cases of teeth with large metal fillings or shell crowns which do not respond to the cold test, to learn if the canals are filled.
- (18) To learn if apical sensitiveness is due to a large apical foramen or unremoved, undevitalized remnant of pulp.
- (19) In cases of chronic pericementitis ("lame tooth").
- (20) In cases of alveolar abscess to determine which tooth is responsible for the abscess.
- (21) In cases of alveolar abscess to determine the extent of the destruction of tissue—bony and tooth.
- (22) In cases of alveolar abscess to learn how many teeth are involved.
- (23) In cases of abscess of multi-rooted teeth to learn at the apex of which root the abscess exists.
- (24) In cases of abscesses of crowned teeth to learn whether the canals are properly filled.
- (25) As an aid in differential diagnosis between alveolar abscess and pyorrhea alveolaris.
- (26) To observe destruction of tissue due to pyorrhea alveolaris.
- (27) In cases of pericemental abscess.
- (28) In cases of persistent suppuration which does not yield to the usual treatment.
- (29) To observe the course of a fistulous tract.

(30) To observe the field of operation before and after apicoectomy.

(31) To locate foreign bodies, such as a broach in the pulp canal or tissues at the apex of a tooth; a piece of wooden toothpick in the peridental membrane, etc.

(32) To determine the presence or absence of a bit of root imbedded in the gum tissue.

(33) To diagnose fracture of a root.

(34) To observe the size and shape of the roots of teeth to be used in crown and bridgework.

(35) As an aid and safeguard when enlarging canals for posts.

(36) To examine bridges about which there is an inflammation.

(37) To observe the field before constructing a bridge.

(38) To observe planted teeth.

(39) In cases of cementonia.

(40) In cases of bone "whorls."

(41) To locate stones (calculi) in the salivary ducts or glands.

(42) In cases of bone cysts.

(43) In cases of dentigerous cysts.

(44) In cases of tumor, benign or malignant.

(45) To observe anamalous conditions, such as the fusion of the roots of two teeth, for example.

(46) To observe the location and extent of a necrotic or carious condition of bone.

(47) To diagnose antral empyema.

(48) To observe size, shape and location of the antrum as an aid in opening into it.

(49) To locate foreign bodies, such as tooth roots or broaches, in the antrum.

(50) To observe cases of luxation before and after reduction.

(51) In cases of fracture of the jaw before and after reduction.

(52) In cases of ankylosis of the temporo-mandibular articulation and the joint formed by the tooth in the jaw.

(53) To observe the field of operation before and after resection of the mandible—the operation for bad cases of prognathism.

(54) In all cases of facial neuralgia with an obscure etiology.

- (55) To observe the inferior dental canal.
- (56) In cases of Ludwig's angina.
- (57) In cases of facial gesticulatory tic (spasmodic twitching of a set of the facial muscles).
- (58) In cases of periodic headaches.
- (59) In cases of insomnia, neurasthenia, insanity and kindred nervous disorders. Dr. Upson, Cleveland.
- (60) To allay the fears of a hypochondriac.
- (61) In cases where the patient cannot open the mouth wide enough for an ocular examination.
- (62) In research work to study anatomy, the development of teeth, action of bismuth paste, bone production and destruction, changes occurring in the temporo-mandibular articulation when jumping the bite, blood supply to parts, resorption of teeth and the causes for it.

(63) As a record of work done."

All of these different radiographs that I have, of which there are 63, can be easily illustrated by examples. Several of these instances are to be shown tonight. Some of them we did not bring, and some of these we have no actual cases, though a number of them have been reported, so I will show just a few cases before Dr. Eisen follows me.

(Showing figure.)

This shows a bad impaction of two teeth. You will see that they are not coming in the right direction, and there is a bad malposition. The upper line of the teeth here allows no room for these two teeth to come through. This shows you the technique of avoiding the near jaw. The entire lower inferior maxillary is right here all in one bunch, that is because the ray went right through the posterior part. This is the angle of the near jaw, right here.

(Next plate.)

This shows a broken-off tooth, the third molar I believe this is, and there is a cavity of necrosed bone around it. The next figure shows a point which I wish to call attention to. This shadow that is here is nothing more than the hyoid bone. It is very often mistaken for an unerupted tooth, and many other things, when it is no more or less than the hyoid bone, and that is one of the main reasons why I brought this case along.

(Next plate.)

The original of this is a very beautiful plate. Here is a large

odontoma, this being the angle in the lower portion of the jaw. Here is a molar and right above it is a large odontoma.

(Next plate.)

These are enlargements of films. This illustrates the shortening of teeth. This is the center line of the palate, and this is the right and left incisors and around here you will see a large area of necrosis in contrast to this tooth over here which is normal.

The next plate shows a malposed tooth unerupted, trying to get through, but its edge impings on the neighboring tooth. This is one likewise, unerupted.

The next plate shows a root filling not filled to the end, and a large necrotic area taking in the root of this tooth, also right around here.

The next plate you can easily see is an unerupted tooth, that was not diagnosed. The X-Ray, if taken earlier, would have shown that there was a tooth down there.

The next plate is also the case of an unerupted tooth trying to get through.

The next plate shows distinctly the three roots of a molar. This is a case of a dentist himself who has had three or four years of trouble in having this molar properly fixed. The plate here shows an incomplete filling in this root; here is the bottom of the second and here the third one can be seen on the film. Neither of these roots were completely filled. One of them has just gone past the division, as you will see, and stopped right there. This condition was shown by my plate and subsequently corrected. That is all I have to offer this evening.

A DEMONSTRATION SHOWING NORMAL AND PATHOLOGICAL CONDITIONS AS REVEALED BY SKIAGRAPHS.*

BY DR. E. J. EISEN, MILWAUKEE, WIS.

In order to show the correct position in taking skiagraphs, we will take those patients now that are here.

(An adult male patient was at this point called to the platform.)

What we want to demonstrate is to get the plate parallel with

*Lecture delivered before the Wisconsin State Dental Society, July, 1912.

with the focus of the tube. We will develop these and show them tomorrow morning at the clinic. This is a question of an unerupted tooth. Here is a case of a lower third molar (calling second patient) which ought to be taken with the plate lying down. It does not show up well with a film. However, we will take it for whatever it is worth.

(X-Ray film taken.)

I am laying myself open to some risk. I believe that Roentgen work in dentistry brings dentistry closer to the scientific level of medicine than anything that we have heretofore had. It is in many instances a case of elimination, and nothing will give the aid in making a diagnosis that the X-Ray will; and while skiagraphs are hard to read they always tell the truth and it only remains for us to read them correctly. There are many things that we find out too late that we cannot believe, as I will show afterwards, which will be difficult to distinguish or to read, because it is new work, and your imagination sometimes runs away with you. I will show those plates and go over the pathological conditions as we find them.

(First plate shown.)

This is a normal occlusion with a great many fillings, with no pathological conditions, and the teeth very little distorted. You will find they are enlarged a little, but it shows a normal condition.

(Next plate shown.)

This is a case in my own practice, from my own carelessness, of a broken Gates-Glidden drill in the root canal, in my attempt to drill past it. This is the broken segment there. You can see where the other drill passed it and I was able to fill the roots up there; those two spots. I was unable to get the drill out, to be perfectly frank with you.

(Next plate shown.)

This does not show very distinctly, but shows a broach inserted to determine the length of the canal.

(Next plate shown.)

Here is where the length of the canal was determined by the insertion of a broach along here. This tooth has an ulceration up here, with the root filling extending to this point.

(Next plate shown.)

Here is a tooth in the mouth of Dr. Case, with a long standing ulceration here, and I tried to determine the length of that root

with a broach. The ulceration extended down there. It is very indistinct.

(Next plate shown.)

This is a case in a child. I don't know that you can see it very well. I tried to extract a temporary molar, and when I found that the alveolus was moving I took a skiagraph to find out why, and found that the temporary molar was grasping the permanent bicuspid down here, and splitting the tooth and pulling it out in two parts.

The next case shows a case of shortened or very short roots upon which Logan crowns had been inserted, and one of these had abscessed, and it was not a very pleasing piece of work. I wanted to take those out, take the crowns off, but after taking a skiagraph and seeing to what extent the posts had been inserted in those roots, I left well enough alone.

(Next plate shown.)

This is a case of six Logan crowns in the front or in the anterior teeth with only one perfectly filled canal. These were all removed, with the exception of this, and the canal refilled.

The next plate shows a case that was not diagnosed until the tooth was extracted. It shows that the reading of the skiagraph is the important thing. This tooth had been abscessed for a long while, and I had taken that crown off and tried to treat it, but did not succeed. When I extracted the tooth I found that the apical third here had been entirely absorbed. With a magnifying glass I can show that very plainly on the plate which I missed in making the diagnosis because I had not looked for it, but this entire apical end here was necrosed and absorbed.

The next plate shows a large abscess here. The case had two fistulous openings. It was to determine from which tooth the abscess originated. It does not show it very plainly here, but the original plate shows that this tooth here was the cause of it, and carrying out a surgical procedure and a surgical belief, where there is an area of alveolus tissue destroyed to that extent it is foolhardy to attempt to remedy it through canal treatment, so this tooth was extracted. This one was found to have a perfectly filled root, which does not show, and this entire area here was necrosed.

(Next plate shown.)

This is a case that came to me complaining that she was losing one tooth after the other from ordinary loosening, as she explained,

and when I first looked at it I missed the true condition. In looking in the mouth I took it for granted that this center tooth or crown was imposed upon the root there, or was swung, rather. In taking a skiagraph I discovered under the gum margin that a root, the entire root of a molar remained in there, and this bridge had been swung over that while the tooth was abscessed. This root here also was only filled about one-third, and a post inserted without any attempt to fill it perfectly.

The next shows a case of bridgework where the question arose as to whether it was advisable to try to treat that abscessed root or not. I don't know that you can see it, but it shows an absorption of the alveolus right along there. This was abscessed here. There was only about one-eighth of an inch of one root that was still attached to the alveolus. In a case like that it is important because you save a great deal of trouble in attempting to save a tooth like that as it shows you at the first glance how impossible it is to remedy that condition where that amount of bone tissue is destroyed.

(Next plate shown.)

This is a very interesting case complaining of soreness in the cuspid, and for weeks I tried to influence the patient to believe that there was nothing there, because I believed that this root was perfectly filled. It seems to be perfectly filled to the apex, and I dismissed her. In three or four weeks she came back and she had an abscess, and I looked at my skiagraph again and I could not make up my mind what this was here, showing you that the skiagraph reveals things which we cannot diagnose. I went to the chair and I lanced it, and sat down waiting for it to stop bleeding, and when I got back to the chair I found in the opening a little white speck, and I pulled that out, and it proved to be a piece of gutta percha root filling which had been evidently forced through, where a tooth had been extracted and remained in the gums or in the tissues after the tooth had been extracted, and healed up, and for five or six years she had had no trouble except an evidence of pain, with no redness or soreness. That proved to be a little piece of root filling, which was firmly imbedded in the alveolus until it abscessed.

The next plate shows another view of the under side of that mouth which I showed a while ago. Unfortunately it does not show the imperfection of these root fillings here. The bridge was removed and reinserted after the roots had been filled. This tooth here had an abscess which you cannot very well see here, and this one.

back here, was well filled; very well filled. Evidently with a cement root filling.

(Next plate shown.)

This is a case of Dr. G. V. I. Brown, a case of a bony cyst. There was quite a lump on the face with no evidence of an ulceration, but a hard, bony cyst. He operated on that, but unfortunately the patient did not show up again, and he does not know the outcome. He does not know either, the cause of the original infection.

The next plate shows a case of Dr. Brenner, who tried to bring out into place a first permanent molar. I don't know how long Dr. Brenner tried to bring that tooth into place. There was plenty of room but he could not move it. The skiagraph on the original plate—unfortunately it does not show here—shows an exostosis of these roots with a hook on here which prevented him from bringing it into place. He informed me today that he did the only feasible thing, which was to crown.

The next plate shows a deciduous tooth remaining, and the question was whether the permanent tooth was above it. It shows a clear space and was allowed to remain because there was no permanent tooth following it.

The next plate shows another case of Dr. Brown, which was sent down for diagnosis. You will notice here from the periosteum there was an infiltration diagnosed as a sarcoma which was sent to the Mayos, and the patient died on the table.

The next plate is very indistinct, but here is a man suffering from neuralgia with no apparent cause, until a skiagraph was taken and an unerupted third molar was shown.

The next plate gives you the relative position of the antrum; there was a probe passed through the middle meatus of the nose into the antrum; a case of empyema of the antrum. I show you this to call your attention to the next plate, which shows the apex of a root in the antrum. Here is the antrum. This case had been suffering with neuralgia for two or three years without any apparent cause. This molar had fairly well filled roots, and skiagraph revealed that this one root extended into the antrum. Whether it was suppurating or not, I don't know, but the tooth was extracted. Dr. Kuhnmuensch assisted me and worked two and one-half hours on it, but finally got it out, and the patient is now free from any trouble there.

The next plate shows where there was a fistulous opening on

the jaw. I don't know that you can see it. They were unable to detect any cause. She had been operated on three times. The bone had been curetted and they had almost given up hope when the skiagraph revealed a fistula running down into the neck around here, and coming out there. This posterior canal was filled, the anterior canal was not. The tooth was extracted.

The next plate shows a case that was sent to a number of physicians. Whether his insanity is the result of some of the treatment which he received, I don't know, but he was treated by osteopaths and by every other kind of physician. The diagnosis was made as a case of dementia praecox, with no apparent cause. Everything was eliminated as causing his mental defect except his teeth. My brother made the diagnosis as dementia praecox, and asked me to find out if there was any trouble with any of his teeth. It was a case of Dr. Kuhnmuenech's, and the skiagraph revealed here an unerupted supernumerary tooth back of the third molar. The boy was in a pitiable condition, and Dr. Kuhnmuenech questioned my diagnosis, but he extracted this third molar and went up there and found on either side a supernumerary tooth which was extracted, and he tells me today that the patient is at least 50 per cent improved and on the road to recovery. The patient was about 27 or 28 years old, and the constant pressure of this supernumerary tooth, coming very close to the facial nerve there, was the cause, or at least one of the causes, for his insanity.

The next plate shows in a measure the class of work that the ordinary practitioner will come in contact with, and will show what an aid it is in a rapid and efficient diagnosis.

THE SUPERMOLAR.*

BY GEORGE CUNNINGHAM, M. A., D. M. D., L. D. S.

Organizer of the Cambridge (Eng.) Municipal Dental Institute for Elementary School Children.

It is daring to christen with a new name an old familiar friend, but I dare and have specially chosen the American Dental Society of Europe as my first censors. And I have precedents.

In 1882, that great veteran of operative dentistry, the late Jonathan Taft, in discussing a communication to the Ohio State Dental

*Read before the American Dental Society of Europe.

Society on "What Shall Be Done with the First Permanent Molar," wished the profession to discard the name of "six-year molars." *Third* molars he thought a much better term for various reasons. Care for these teeth should begin early, even with the mother, and as a matter of fact, our attention is not called to them till long after their eruption. There is something radically wrong in the care of the children. Defective hygiene is likely to cause atrophy of the enamel organ, and the result will be defective spots in the enamel. There will not be perfect junction of enamel in the fissures, and this is *more likely to occur with these molars than with any other teeth.*

In 1887, in the Section of Dental Oral Surgery of the Ninth International Medical Congress, the late celebrated Dr. Andrien of Paris, presented a long statistical communication based both on hospital and private practice, proving that the first permanent molar inevitably decays in from 74 to 75 per 100. Hence he recommended the extraction of all these molars, not mere extraction, but reasoned out and based on his statistics, proving that it was merely a tooth of transition.

The late Prof. L. D. Shepard, in reply, pointed out that the only tables good for anything would be those showing, not the ratio of frequency of decay, but, to be scientific, there should be coupled with them tables showing the ratio of preservation under varying conditions, where skillful remedial means had been faithfully and consistently applied.

CONCLUSIONS AFTER SYSTEMATIC AND CONTINUOUS DENTAL TREATMENT OF ELEMENTARY SCHOOL CHILDREN (5-12 YEARS) IN
CAMBRIDGE.

When the permanent teeth first appear, the cutting edge presents three more or less pointed processes, known as "gemmules." The function of these processes appears to be confined to assisting the emergence off the tooth through the hard and soft tissues covering the tooth crypt.

Observations on the best sets of teeth, both in the dead and the living subject, show that absence of caries is always accompanied in youth by very flattened cusps in the bicuspid and molar regions and in age by an attritic process which has entirely flattened or even rendered concave the coronal surfaces of the teeth in these regions.

Even under present-day conditions, the incisor "gemmules"

quickly disappear, leaving flat, even cutting edges. It is not improbable that the cusps of bicuspid and molars are modified "gemmules" and are intended to have the same function.

Owing to the soft dietary at present favored by civilized communities the cusps or "gemmules" on the bicuspid and molars are not worn down as in the case of the incisors by the mastication of sufficiently hard substances, and they remain with their intervening fissures years after they have fulfilled their original function.

Food debris is thus accumulated inevitably in these pits and fissures, and unless quickly and thoroughly removed by a tooth brush, undergoes a process of fermentation with an acid reaction sufficiently strong to dissolve the inorganic constituents of the enamel.

The non-pathogenic micro-organism, always present in large numbers with the most beneficial effects in the human mouth, are powerless to prevent this destructive change. A convenient pocket has been formed and the ends of the dentinal tubules are exposed before there has been time for their ends to be sealed by the deposit of secondary dentine, which always occurs when this results from attrition. A new and unnatural condition thus arises. The exposure of the soft protoplasmic fibrils of the dentin by a process, probably akin to chemico-taxis, induces the appearance of pathogenic micro-organisms. If the destruction is allowed to go on, these multiply in ever increasing ratio at the expense of the usual bacteria in the mouth, and the decay spreads from tooth to tooth with ever increasing violence until the whole denture is affected.

In every mouth where there are no intergemmular fissures on the crowns of bicuspid and molars, interstitial cavities are absolutely unknown; therefore, if we cannot by our dietetic habits wear down the gemmules by the ordinary processes of mastication, we are reduced to the necessity of mechanically cutting out and filling up the fissures.

The so-called gemmules are really the points of original calcification. The cusps in tooth crypt are decidedly sharp pointed as compared with the blunt cusps on emergence.

Save the molars and the upper bicuspid, i. e., all the fissured teeth, and you save the entire denture; with this exception, wherever the lingual surface of the incisors or cuspids you have an exaggerated "cingulum," the same arguments hold good, inasmuch as the fissures in these regions should be beveled out by the interlocking

of the opposing teeth in seizing or tearing the food as is seen in carnivora.

If you save the fissure cavities there are no interstitial cavities.

L' ENVOI.

But the main reason I call the best and strongest and most easily savable tooth in the head the "Supermolar" is for the purposes of intelligent and useful propaganda for the masses in all countries.

ETIOLOGY, DIAGNOSIS AND TREATMENT OF EMPY-
EMA OF ANTRUM WITH RELATION TO DENTAL
SURGERY.*

BY G. C. OTRICH, M. D., RHINOLOGIST AND OTOLOGIST,
BELLEVILLE, ILL.

In dealing with this subject, I will endeavor to take it from the dental standpoint rather than from the physician or rhinologist, as more than 50 per cent of the cases of antral diseases are due to direct or indirect infection from the teeth. With so great a proportion, I think I am more than justified in giving this paper in direct relation with dental surgery.

The inflammatory disease of the maxillary sinus, does not occur as an extension of a catarrhal process. I have divided the etiology into three sections. First, the course of infection with relation to the teeth; second, course of infection through the nares, and those due to systemic infection.

In dealing with the infection from the teeth, I will divide into two sections those of direct and indirect, the direct being those cases which come from the diseased condition of the tooth or roots of the teeth, directly, and secondly or indirectly, those that come from inoculation of the teeth or surrounding tissues by septic instrumentation.

We all know without going into details, the proximity of the roots of the teeth to the antrum, so there will be no need of considering the anatomical relation of the teeth to the antrum, but it would be well to add that the antrum, in its anatomical position and size, varies to a great extent in different cases. The first pathological

*Read before the Southern Illinois Dental Society, October 29, 1912.

condition of the teeth, which I consider in direct relation to the infection of the antrum, is the abscess condition of the roots. The bone very easily becomes carious where there is an abscess in direct proximity. The carious condition advances very rapidly, owing to the fact that the bone of the superior maxillary is diploetic. Therefore, we can readily see how easy it is for the fistulus opening forming between the root abscess and the antrum. In this class of cases, there have been a number cited where the tooth had been forced into the antrum by the patient, and one case of such long standing was where the tooth had worked its way into the nasal cavity. So the extraction in this class of cases should be done with very great care, as it is impossible to know the extent of the caries and the tooth be forced into the antral cavity, by the dentist, which would cause a great deal of inconvenience to both dentist and the patient.

I will next take up the cases in which the infection to the antrum is through the blood and lymphatic vessels. In cases of inflammatory process, or inflammation of the pericemental membrane, the antrum may also become infected through the blood or the lymphatic supply and in this way the inflammatory process is established. In a great many cases following pericementitis, we have a necrosis of the alveolar process, which as I have mentioned before, readily relates to antral disease. Some of our most obscure and difficult cases are the ones for which the dentist is directly responsible, through carelessness regarding asepsis. He has in this way induced infection or caused traumatism to such an extent that an inflammatory process soon follows.

It has been proven that infections have been carried to the root canal, and beyond the apex into the bone by a septic broach carrying the degenerated pulp tissue, or a bacterial infection. Cases have been traced to where the infection has been caused by the gutta percha cone. In these cases, the infection is very slow manifesting itself and it is weeks or months after the treatment has been put in before the inflammatory manifestations are evident.

I do not think that I would be stepping out of bounds if I would call your attention to the treatment of abscess roots. In many cases these abscesses at the apex of the root are treated through the root canal, and we know if the abscess is of such a size that this opening is insufficient for proper drainage, the inflammatory process advances and the necrosis of the bone immediately follows. The discharge of pus is apparently no longer present and you fill the

tooth. This, without giving the necrotic or carious condition of the bone proper attention, so we know that a secondary inflammation and necrosis is bound to follow, as the inflammatory process always goes in the line of least resistance. It is, therefore, very apt to extend into the antrum, so I, therefore, say, that I feel a little suggestion in regard to the treatment of these cases would not be out of place. If you wish to save the tooth and stop the advancement of these advanced conditions, I think the proper surgical procedure would be to remove the alveolar process and dissect the apex and the necrotic bone and thereby establish perfect drainage, and with this procedure there can be no further advancement of the inflammation, therefor, saving the antrum from the infection and also the tooth.

Regarding the second source of infection that originating through the nares it generally follows some of the other inflammatory conditions of the nose. It is seen occasionally with hypertrophic rhinitis, because of the fact that the hypertrophy tissue interferes with the drainage and secretion of the antrum. It may occur in any acute rhinitis, either from the same reason, or because the micro-organism which causes the acute inflammation of the mucous membrane may also infect the antral cavity. You have probably heard of nasal polypi being the cause of empyema of the antrum, but it is seldom the case, as the polype generally follows the empyema. Acute infection of the antrum may follow any of the acute infectious diseases which manifest themselves in the upper air passages, influenza being the most prevalent of these. I have also seen tubercular and syphilitic manifestations in the antrum, and the tubercular infection is one of the slowest yielding to treatment.

The first symptom of disease is pain, due to the local inflammation and to the pressure of the swollen tissues on the nerve. As I will show you the infra-orbital nerve in its course through the maxillary bone is not well protected by bony covering and is sometimes exposed directly to the action of the pus. This pain may be referred to the forehead, the teeth or the orbit. There is sometimes a fullness complained of over the antrum, and as in all cases of infection, we have the malaise and fever. The physical findings are generally pain on pressure over the antrum or the infra-orbital region. Pressure on the buccal surfaces of the second and third molar, high up, or on the lingual surface, will also produce pain. If the case is far advanced you will feel a crepitus on pressure over the antrum.

There is one condition which I will mention which causes the dentist a great deal of trouble in regard to differential diagnosis, and that is neuralgia of the facial nerve accompanied by swelling. The pain in these cases is so uncommon that it is hard to differentiate, but you will not have the pain on the buccal and lingual surfaces on pressure. The pain is also referred to the inferior maxillary and on pressure will not be localized as in empyema of the antrum. The neuralgia is of more of an acute onset.

One of the best aids in diagnosis is the transillumination. This is best obtained by placing the patient in a perfectly dark room and then inserting within his mouth a small electric light devised for this purpose. Under normal conditions, a glow will be perfectly visible through both the cheek walls and if either of them is infected, the diseased side will be darkened, due to the shadow made by the pus. If the antrum is normal, the pupil will show a glow due to the red crescent of light under the lower lid, and if diseased, the glow will also be darkened. This applies most generally to the advanced cases and does not show so clear in the acute. The next best diagnostic apparatus is the X-Ray and by making a skiagraph, if there is pus it will show very readily. The method that the rhinologists use, which I think is the best, is by making a puncture into the antrum with a trocar from the nasal cavity just beneath the inferior turbinate, by aspiration or forcing water into the antrum, the pus or a sero-purulent contents are brought out, thus proving the exact pathological condition present.

With regard to treatment, I will not worry you by expounding a number of operative procedures that are recommended by rhinologists or oral surgeons, but will offer you a few suggestions, which I think would come in the line of the general practitioner of dentistry, if you do not feel justified in referring the patient. The reason why we do not recommend the opening of the antrum through the mouth is the danger of a chronic fistula forming, thus a long continued discharge of pus into the oral cavity, and producing a general septic condition of the patient. We, in a great number of cases, open the antrum through the mouth, but always make the second opening through the nares for the discharge, and then close up the incision which has been made through the mouth. In case you are not in a position to get assistance and do not want to sacrifice the tooth by making an incision over the second bicuspid or first molar and raising the periosteum, and taking a large size burr, you

can easily make an opening into the antrum of a sufficient size, thus giving immediate relief. By irrigating the cavity with normal salt and following with a boric acid solution, a cure is brought about. But if the discharge continued over fifteen or twenty days, the patient should be referred to an oral surgeon or rhinologist for a more radical operative procedure.

ON RECENT ADVANCES IN THE TREATMENT OF MALOCCLUSION OF THE TEETH.*

BY DR. B. E. LISCHER, ST. LOUIS.

With many of the recent advances in orthodontics every reader of dental literature is familiar; but the field is now of such ample size and comprises such a vast number of important details, that it is daily becoming more difficult to master even the essentials. Moreover, a critical review of all the advances would carry us so far beyond the time usually assigned to a single essay, that I am compelled to devote myself to a consideration of only a few.

I.

It is undoubtedly true that the most fundamental step of all our recent progress in the treatment of malocclusion is our advance in the art of diagnosis. Present-day methods of treatment do not differ very materially from those of a decade ago; but we now have a clearer conception of all those fundamental deviations from normality which usually conjoin in malocclusions, and hence of treatment requirements.

We now perceive the denture of man in its entirety, and not as a mechanism composed merely of a number of teeth set in two arcades. We now realize that these two arcades not only have a definite form if each tooth is in normal position, but that there exists, in addition, a very definite relationship between them. Furthermore, our experience has taught us that the degree of normality of arrangement of the teeth in a growing child, during the period of their eruption, conditions the ultimate normal development of the jaws beyond. And finally, we are able to picture to ourselves, prior to treatment, the ideal conditions which should obtain in every individual.

*Read before the St. Louis Dental Society, Dec. 3, 1912.

This perception of our problems has resulted in a comparative study of the various types of malocclusion to the extent that each form can now be readily diagnosed in its earliest stages. Hence the dream of the pioneers, that the mission of our art is to prevent, as well as cure, has become a measureable reality. Briefly, then, the one great lesson which recent orthodontic progress teaches is that all forms of malocclusion develop slowly; that during childhood they are ever in process of development. To appreciate this evolution of types, to detect them in their incipiency, and to divert the underlying forces into channels of normality—this is the highest mission of orthodontics.

The most opportune time for the treatment of malocclusion is between the ages of eight and twelve years. This fact has not been as widely disseminated among the laity as its importance demands. Occasionally, one meets with such extreme deformity that treatment is undoubtedly indicated prior to the eighth year; but this is the rare exception and not the rule.

In most cases, the best that any man could do for a patient of four, or five, years would be the establishment of a normal deciduous denture. But a normal temporary denture is not invariably superseded by a normal permanent denture. Indeed, every practitioner of experience can recall a goodly number of patients who came under his care during infancy and who, during those first few years, had ideal dentures, so far as their form and occlusion were concerned. But later, when the change from a temporary to permanent dentition set in, a malocclusion developed.

In this connection it has been pointed out by various writers that between the ages of five and seven years normal dental growth causes a separation between most of the temporary teeth; that if this growth does not occur, malocclusion will invariably follow in the permanent set. Hence the conclusion: if this growth does not occur, the operator should make it occur.

This sounds very reasonable from a theoretical point of view; but what about the function of mastication if treatment is instituted thus early? Will it not be seriously interfered with? And can it, or will it, be re-established?

I conclude, therefore, that no matter how well-meaning an idealist may be, there is no reasonable excuse for such early treatment except in cases of extreme deformity.

I have stated that the best time for treatment is between the ages of eight and twelve, but this does not mean that every case should be started at eight, or nine, or even ten. The reason for this is not far to seek, viz., the health of the patient, and particularly of the oral cavity, must warrant orthodontic treatment. Furthermore, the type of deformity controls, in large measure, the operator's decision as to when treatment is most opportune.

It is obvious that this is a matter regarding which even the most competent will disagree. But no matter how men may differ, this much is accepted as gospel: *The treatment of malocclusion ought never to be postponed beyond the twelfth year.* This is a deduction based upon the experience of all who are qualified to speak upon a matter so important, it is an axiom now so patent to every reflective mind that a momentary glance into the immediate past makes one wonder why its formulation was so long delayed. Moreover, it is so far reaching in its significance that it should be framed in letters of gold and made to adorn the walls of every operating room.

The time at my disposal will not permit me to present the many facts upon which this axiom is based, but in the next generation a man will be adjudged guilty of malpractice if he violate it. Hence I repeat: *The treatment of malocclusion ought never to be postponed beyond the twelfth year.*

II.

The last decade has brought forth many advances in the technique of treatment. The very materials out of which appliances are constructed have undergone marked changes. Thus, the once universally used alloy, the so-called German silver, has been practically abandoned. For it was found that the secretions of many mouths not only caused undue corrosion of its structure, but actually set free large quantities of zinc (which element enters largely into its formula), which were swallowed by the patient. Grieves established the fact that this continued dosage of metallic salts into the alimentary tract unfavorably affected the action of the ptyalin and enzymes.

In their search for a substitute for German silver, many operators turned to what has been termed the noble metal group, viz., the alloys of platinum, irridium and gold. These have been put to

the test for a sufficient length of time, and are now procurable in a practical variety of designs.

But the unavoidable waste and consequent loss in value in both the manufacture and application of appliances when precious metals are used, has stimulated invention to the extent that several very acceptable, non-corrosive, base metal alloys are now employed.

Some of the most notable improvements in the details of appliance construction may be found in anchor bands. The restrictions formerly imposed by the so-called systems—such as limiting oneself to an anchor band of definite design—have finally been repudiated. Indeed, one of the best evidences that we have entirely outgrown the narrow views of a decade ago, is the large variety of anchor bands now on the market. The ingenuity of many workers and the various requirements of sundry types of malocclusion, were destined, sooner or later, to promote this advance. The plain, non-adjustable form of anchor band, and the so-called seamless type, are widely used today. The adjustable form has recently been improved by making it continuous, or “all-closing.”

The attachment of the buccal tube, formerly universally provided by the manufacturer, has given way to the unattached tube. And the tube itself has undergone marked improvements to meet our various needs, e. g., the slotted tube, the square tube, the oval tube, the telescoped oval tube, the threaded tube, the telescoped threaded tube, the hinge jointed tube, etc.

The alignment wire has, perhaps, undergone fewer changes, but we note a marked tendency toward smaller sizes. Among the more popular improvements in design, we may mention the divided wire, and the attachments for bodily movements of the teeth.

One of the most valuable additions to treatment appliances made in recent years is the attachment of the so-called lingual extension wire. This obviates the necessity for ligating each individual tooth, an advantage readily recognized. Another very important advance is the introduction of the silk grass line ligature, which has displaced the brass wire ligature almost as completely as the latter displaced the waxed linen threads of a few decades ago.

III.

One of the most frequent causes of failure in the treatment of malocclusion is inattention to the fundamental requirements of

post-treatment maintenance. Progress in this phase of treatment has been quite marked, and many of our earlier difficulties have only recently been overcome. It has occurred to me that the most practical and concise statement of the problems here involved is as follows: *Post-treatment maintenance must be so designed as to provide for (a) maintenance of tooth position, (b) of arch form, and (c) of arch relation.*

It is true that in some treatments we aim to induce jaw development; but this, after all, constitutes what might be termed a "by-product" of treatment. In other words, our technical skill is directed solely at a correction of tooth position, of arch form and arch relation, and the subsequent maintenance of the newly established relations. To the extent that we succeed in these, to that extent will normal maxillary growth proceed. We possess no special mechanisms for the correction of jaw deformities *ab extra*, like the oral surgeon.

Post-treatment maintenance of a part of the arch, e. g., the six anterior teeth, has not materially advanced. The plain bands with connecting wires, such as are used for maintenance of position of individual teeth, are still employed. It is where the entire arch has been involved in treatment that new ways of maintenance have been introduced. Formerly, vulcanite plates were used in such instances which, being removable, often spelled failure. A large percentage of patients simply cannot be taught the importance of retention. This led to the introduction of a fixed appliance designed for maintenance of the entire arch, which, for want of a better term, we call a lingual wire retainer. The wire usually extends from first molar to first molar, and is of 18 or 20 gauge. It permits of many modifications and attachments to meet the various requirements.

But the most important advance in this division of our work is the recent conception that arch malrelation (disto- and mesio-closures) must be provided with maintenance appliances which permit of continued application of intermaxillary force. It is here where most of our failures occurred up to a comparatively recent period.

Time will not permit me to enumerate the many notable advances made in the solution of those problems imposed upon us by the various facial deformities due to malocclusions, but enough has

been said to indicate to you that progress in orthodontics is easily keeping pace with those other departments of our profession with which most of you are more intimately acquainted.

PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting of this society was held at 81 East Madison street, Chicago, on Tuesday evening, October 8, 1912, at 8 p. m.

Dr. J. G. Reid, president of the society, occupied the chair.

Dr. Truman W. Brophy presented a paper entitled: "The Surgery of the Tonsils and Adenoids."

DISCUSSION.

DR. STANTON A. FRIEDBERG:

Mr. President and Gentlemen. I thank you for the opportunity to be with you. I have brought with me several books that I thought might prove of interest in illustrating the development of the tonsil operation. We find in Hippocrates' writing that while he did not go far into differential diagnosis, still he recommended in the case of large tonsils the evulsion with the finger, a method which is practiced today. Subsequent to his time different measures were advocated, for instance, the ligature, the scissors and the sharp knife, but the bug-bear of the whole situation was the ever present fear of hemorrhage.

Most of us are familiar with the tonsillotome operation, in vogue for so many years. I have here an illustration of the forerunner of the tonsillotome, which was originally devised as a method for removing the elongated uvula. It appears in Heister's Surgery, Edition 1739. Subsequent to that the next illustration of a similar instrument is in Bell's Surgery in 1786. It is based on the principle of the sliding knife in a ring slot. In 1827 Physick devised his Guillotine which was first used for amputating the uvula and later was adapted for removing the tonsil. The tonsillotome, as we know it, such as Mackenzie's, Fahnstock's and Mathews', are all based on the underlying principle described above.

Another method of removing the tonsils was the method employed by Cheselden, Bell and Sharp in England in the Eighteenth century. They spoke against the removal by the scalpel or scissors, but used the ligature instead. Their method was to tie a pliable silver wire or a piece of catgut around the tonsil, and leave it in place for several days until the tonsil sloughed off. The wire was introduced through a canula passed either through the nose or mouth. This method was advocated in order to obviate the danger of hemorrhage.

Coming down to the modern operation we have the dissecting method preferred by scalpel or scissors. A year or so ago Dr. Sluder of St Louis evolved a new idea for the tonsil operation. He found that by using an instrument based on the ones already described, but more particularly the Mackenzie guillotine, and pulling the tonsil upward and forward the resistance furnished by the alveolar eminence below the molar teeth of the lower jaw was sufficient to force the tonsil through the ring of the instrument whence it could easily be cut off in its entirety. The tonsillotome is introduced from the opposite side of the mouth, and the tonsil pulled out of its bed, being lifted upward and forward. If any of the tonsil remains it can be easily pushed through the ring with the finger or tongue depressor. The presence of the capsule determines whether the tonsil is entirely removed. A probe passed into the crypts will meet with resistance when it reaches the bottom of the tonsil. If the indication is present for an operation, it is important to take the tonsil entirely out. It is not always the large tonsil that projects that causes trouble. In fact, most of the trouble with the tonsils is from the so-called submerged tonsil which may be almost covered over by the pillar. The concealed crypts may retain the material from which absorption takes place, thus producing and continuing an infective process.

I should say something in regard to the indications for the removal of a tonsil. These indications depend on three factors. First, the local trouble; second, the regional; and third, the constitutional trouble. First, we may have the muffled voice and mechanical difficulty in swallowing, or repeated attacks of sore throat. Second, the presence of enlarged glands in the neck, otherwise acute and chronic adenitis, and then those cases in which we have tubercular glands in the neck. Then there are other regional troubles, for instance a chronic catarrhal condition in the throat,

and also the enlarged tonsil obstructing to some extent the Eustachian tube by its pressure upward. Finally, we have the constitutional trouble that may arise from chronically infected tonsils, and of those we may enumerate rheumatism, arthritis, neuritis, pleurisy and endocarditis. You would be surprised to know that in many young children it is rather common to find some valvular lesion of the heart, attributable to tonsillar infection. In these cases we recommend the removal of the tonsils. Recently I saw a patient who had been troubled with an intercostal neuritis for six or eight months previous to the time I had removed her tonsils. The neuritis disappeared shortly after the operation and after a lapse of a number of months there has been no return of the trouble. In the same way I could cite you numerous other instances of nephritis, arthritis, etc., clearing up after a tonsillectomy. Of course, it goes without saying that not every case of arthritis or nephritis is due to tonsillar infection. We simply have to make the diagnosis by exclusion as to which organ is the focus of infection. We have other foci of infection, such as the prostate, gall bladder, appendix, the nasal sinuses, diseased teeth, but when we eliminate these organs, we generally look to the tonsil as the most probable cause. In most of the tonsils I have removed we have found almost a pure culture of streptococci in the tonsils, and this applies particularly to the cases of rheumatism or arthritis. We do not claim that every infection is from the tonsil, but I recall case after case that has cleared up after the tonsil has been removed.

There are about four places in which we usually get bleeding from an operation. Briefly, this usually occurs from the tonsillar artery a branch of the descending palatine or ascending pharyngeal or from the plexus of veins opposite the base of the tongue. In my experience most of the hemorrhage I have observed has been from some little vessel back of the posterior pillar, not serious, but just enough so that one does not feel like allowing the patient to go in that condition, on account of the possibility of a continuation of the bleeding. In children the patient is put to bed after the operation and turned on the stomach, so that if there is any bleeding, the blood will run out of the corner of the mouth, thus giving notice of the trouble. As to the methods of stopping the hemorrhage, we usually apply direct pressure if we can. If that does not stop it, one of the many varieties of tonsil clamps may be used, and if that is not sufficient the best thing to do is to take an artery

forceps and find the bleeding vessel. A solution of adrenalin may be applied on a tampon. Another method is to suture the pillars together over a wad of gauze, and leave the packing until one can be sure the hemorrhage has stopped. A fatal hemorrhage is quite uncommon. Horse serum or anti-toxin serum may be given hypodermically to increase the coaguability of the blood.

For the local anesthesia I have been in the habit of using novocaine in a 1 in 200 solution, to which I sometimes add a drop of adrenalin to a dram of the solution. This is injected through the anterior pillar back of the capsule, into the posterior pillar and also under the tonsil. Very good anesthesia may be secured in this way.

A few words in regard to adenoid vegetation. Our knowledge of this condition dates from the time of Wilhelm Meyer, who published his paper in 1868 or 1869. Of the more serious trouble brought about by adenoids, we may mention the facial deformity, the high palatal arch, deflection of the septum in children. In addition we have the constitutional symptoms with the frequent attacks of cold, laryngitis, bronchitis to which these children are predisposed. None the less important is the effect upon the ear; impairment of hearing from a chronic catarrhal process, acute suppuration of the middle ear, chronic suppuration with its tendency to mastoid involvement or intracranial complication.

A question has been asked in regard to the use of caustics in reducing the tonsil. Chemical caustics and the hot wire have been in use for many years. The latter still has a place where only two or three isolated follicles are causing trouble. If the tonsil is large and is in need of treatment, the quickest way is to enucleate it entirely rather than employ too much cauterization of the tonsil. The scar tissue in the end may be the cause of trouble.

DR. W. V-B. AMES:

I want to ask whether contracted superior maxilli and resulting tendency to mouth breathing are not conducive to the tonsils taking on morbid conditions? My reason for asking is that when I first attended lectures in the late seventies, the extraction of the first permanent molars for prevention and correction of crowded dentures was strongly advocated. As a result I extracted too many of these first permanent molars in my early practice, and I have seen as a result some contracted arches, with, in some cases, a tendency to mouth breathing and abnormal conditions about the tonsils.

I would like an opinion as to whether a narrow superior arch and mouth breathing especially predisposes the tonsils to taking on infection.

DR. L. L. DAVIS:

Mr. President, I cannot claim any great knowledge on this subject, except what little knowledge I have gained from reading dental and medical magazines. It has struck me that during the last year or so there has been a great change in the sentiment of physicians and oral surgeons in regard to the tonsils. I saw an article some time ago where it was claimed that the tonsils had never been classified until someone finally by the process of elimination arrived at the conclusion that the tonsils were part of the gills when we were fishes. Just as soon as some of the foreign invaders, Germans and Irishmen, got into the oral cavity they began a fight, and if the Germans overcame the tonsillar tissue, then as a result you got some of the systemic infections already spoken of. For my own part, wherever I saw a case that seemed to warrant the removal of the tonsil, I would recommend it.

DR. J. G. REID:

It seems to me that in all probability the dental surgeon ought to be about as familiar with that gland as the rhinologist. I believe that the dentist sees more real infection and difficulty in the throat and tonsil than perhaps the regular physician, or even the rhinologist. I think the opportunity of the dentist for studying the conditions is possibly many times greater than that of the physician.

It seems to me that we can gain some valuable information from the reading of the paper, and especially from the experiences of the author. I have never attempted to remove a tonsil, so my experience would not be valuable.

DR. DAVIS:

I would like to ask Dr. Friedberg in regard to a tonsillar condition I saw last week, in which there were masses of deposit in the soft tissue. Now, what was the nature of that deposit? I suggested to the young woman that she see a specialist at once. She said she suffered from frequent attacks of sore throat.

DR. FRIEDBERG:

There are different conditions that might exist. We have crypts that may be filled with secretions. There is a condition known as keratosis. It is parasitical. We find it in the crypts or the tonsil itself. It is a very hard swelling, transformation of the

epithelium, and the only known treatment for that is the actual cautery. Acute follicular tonsillitis or some variety of membranous tonsillitis cause us the most trouble. Angina is a distinct affection of the tonsil. Sometimes it is hard to distinguish. We rely on bacterial examination and the history of the case.

DR. BROPHY (closing the discussion):

The removing of tonsils in my experience, which has not been as extensive as some, has been more in the preparation of the field for operations on the palate. I remove tonsils three or four times a week, and the method I undertook to employ at the outset I have improved on a little.

When I began I disapproved most positively of the methods then in use, which was the use of a tonsillotome, an instrument with a sliding knife which cut the tonsil in two, leaving half of it or more, followed by considerable hemorrhage.

I took out two tonsils this morning, and this is how I did it: I pass the instrument back, and pick up the tonsil between the pillars of the pharynx, and with a sharp knife make an incision through the surface of the tonsil. The membrane will part, leaving the tonsil exposed.

Then, with an instrument like a periostetome placed in the incision midway between the two pillars of the pharynx, the tonsil may be enucleated and it comes away like a pea from a pod. There is usually no hemorrhage to speak of.

I think the reason I have not had hemorrhage is because I take all the tonsil out. There is a chance for retraction and contraction of the blood vessels. If you completely divide an artery it will take care of itself, if it is not too large.

If you make a cut in an artery it will continue to bleed. I think the use of scissors, unless in the hands of an expert, might do a lot of harm, but with the instrument I have described, the tonsil may be easily and I believe quite safely removed.

There is one feature of this work that I ought to have spoken about but did not, and that is the intimate relationship between the practice of dentistry and laryngology. The teeth more frequently than any other tissues of the body are diseased, and the crypts of the tonsils are easily affected, and from the teeth we get infections of the tonsils and adenoids.

The laryngologist does not seem to recognize that fact. I think it is the professional duty of the dentist to call attention of

the parents of the child to the conditions he finds. We know that any child laboring under infectious tonsils and adenoids cannot thrive and develop into a strong and vigorous man or woman that he otherwise would, if this decomposition and infection, due to the presence of pathogenic organisms, were not present.

CHICAGO DENTAL SOCIETY.

A regular meeting was held November 19, 1912, with the President, Dr. J. H. Prothero, in the chair.

Dr. W. E. Post read a paper entitled "The Systemic Effect of Oral Infections."

DISCUSSION.

DR. FRANK BILLINGS:

Mr. President and members of the Chicago Dental Society, let me first thank you for the honor you have done me in inviting me to discuss the paper that has just been read by Dr. Post. Dr. Post has fully covered the general principles of infections of the oral cavity, both regional and systemic, so that what I may say will be of very little value except perhaps to emphasize what he has said and to still further confirm the principles enunciated in his paper.

My attention was first called to oral sepsis as related to systemic disease, a good many years ago, on account of the interest I then took in progressive pernicious anemia more especially, because of a statement made by Hunter of England that progressive pernicious anemia had as one of its most important causes oral sepsis with a resulting toxemia and impoverishment of the blood. Inasmuch as I was deeply interested at that time in pernicious anemia I took great care in examining the mouths of all patients who came to me, and of course one could not do that in any one disease without becoming interested in the oral infections which seemed to be related to other conditions. Then as time went on I was fortunate enough to have gathered around me younger blood who were able to take up parts of the investigative work; the field became very broad, and with the result I think to the satisfaction of all workers in our group. It was found that not only is focal infection of a chronic character a frequent cause of systemic disease of all kinds, but that oral infection alone is also a very important factor as a focal disease.

Dr. Post has mentioned to you the regional infections. Let

me add to what he has said in that direction, that the regional infection may be the sequence of an infection from the teeth or from the alveolar sockets, and may also become a new local focus. The sinuses of the head may be infected from the mouth, and in turn become a new focus of infection. The glands under the jaw and the cervical chain of glands becoming infected, again become foci of new infection, so that one focus becomes the cause of another. Usually the bacterial origin of this focus is the same. In the general systemic infections one may see infection of the skin, curious as that may seem to physicians and to dentists. It is not unusual that a patient complaining of furunculosis of the skin, beginning often about the face, may develop in other parts of the body finally, is due to infection of pus microbes from a focus of the mouth. We know that furuncles result sometimes from lowered general resistance as in diabetes mellitus. But as a rule, when such infections of the skin occur there is a focus somewhere in the body. It is usually a staphylococcus, and not infrequently it is located in the mouth. It means a direct infection. How many people are careful with their hands wet with their own saliva in wiping their face or some other parts of the body. Infected saliva will infect the glands of the skin and suppuration results. When it is once established, it will recur and recur by reinfection.

What Dr. Post has said to you about systemic infections involving the nervous apparatus; the muscular system and even the internal organs of the body is true, and I could name, if I desired, examples to keep you here all night, but it is not necessary. He has repeated enough examples, and I want to emphasize what he has said. Many of the cases he mentioned occurred at the Presbyterian Hospital and in office practice and were patients we saw together. The patient he mentioned as suffering from acute endocarditis from a staphylococcus was one which was in my service in the Presbyterian Hospital, but he forgot to mention in the recital of that case that the alveolus was the source of infection, and the same strain of staphylococci was obtained from that focus as was obtained from the blood, proof positive of the origin of the infection.

I am very glad such a meeting as this has taken place, that we may not only arouse the medical profession to the importance of focal infection as related to systemic disease, and particularly the mouth, but that the dental profession is aroused to that fact. I

want to make this statement as a warning; a few months ago we had a meeting of the Chicago Medical Society where a paper was read upon "Chronic Focal Infections as a Cause of Systemic Disease," and in the work which a group of us has done it has happened that we found the faucial tonsil was the most frequent source of systemic infection in joint, bone and kidney disease, in chronic muscular rheumatism, neuritis, and what not, and, at the same time, at that meeting the statement was made that the tonsil was not the only focus; that not infrequently the various sinuses of the head were a source or sources of infection; that infections of the prostate gland, infections of the pelvis of the kidney, were the cause or result of some anatomical morbid change, and as a consequence the kidney did not drain well, or that a chronically infected gall-bladder, a chronically infected appendix, or a chronically infected Fallopian tube were causes, and that we need not resort to surgery for the removal of every tonsil that projected into the throat; that a big tonsil was not necessarily an infected one; that a small tonsil was not necessarily a healthy one. That a thorough examination of every individual case was necessary not only to arrive at a knowledge as to the real focal infection, but also a thorough examination of the patient to know whether the ills of which he complained were real. In spite of that fact, a surgical furore has practically gone all over the country, and physicians have been removing tonsils for nothing. They are removing them with snare and leaving almost as much tonsillar tissue as they remove, and seal over the surface for more focal infection to remain than if they had not touched it. The same warning is due to your profession. It is not every infected mouth that is a source of systemic disease, and we must not "fly off the handle," and because a patient complains of lumbago or neuritis or of kidney disease, and finding his mouth infected, come at once to the conclusion that the mouth is the source of trouble in that particular individual. It is only with the greatest care that we must work along these lines. We must have the help of the skilled dentist when we suspect oral infection to prove its presence, and establishing its presence, we want his co-operation in helping to clean up the infection and to watch the patient to see whether that focal infection bears any relation to the systemic disease. In other words, we must not grow careless in our work. We must be thorough in what we do, and only by such thoroughness can we relieve the patients who suffer in this way.

Another thing: it is perfectly astounding to me, as I examine the mouths of the many patients I see every day in hospitals and in private practice, to observe the number of dirty mouths of the human race, and this includes the rich as well as the poor. The poor people have dirty mouths, and, it seems to me, sometimes as I examine them and find them with carious teeth, they are perhaps in one sense fortunate that with these carious teeth untouched mouths drain, and they are only in a sense of discomfort to themselves, inasmuch as they cannot properly masticate their food. But many of the richest people whom I see suffer not only from bad mouths, due to perhaps diseased teeth that have been treated, but I want to say to you, and I say it in all kindness, that it seems to me that the technic of the dentist is sometimes ill-applied, if I may put it in that way. I made this statement to some of my closest friends in the dental profession, and followed it by saying that I felt if carious teeth could be treated in some way by which their surfaces would not be covered up by a crown, it would be a great deal safer for the patients. (Applause.) That is a point I want to make in the surgical treatment of the teeth. You should not treat the mouths of patients in a way that any excretions or secretions or septic material will be hemmed in, whether this be done by bridge work or crowns. It would seem to me to be better if you would sacrifice teeth of that kind and put in a good plate.

I want to compliment Dr. Post on his excellent paper, and I wish to thank you again for the honor you have done me in asking me to open the discussion on it. (Applause.)

DR. D. J. DAVIS:

During the past year or more we have had an opportunity at the laboratory of the St. Luke's Hospital to examine more or less of the pathological material that has been brought there from the service of Dr. Gilmer.

Some years ago I became interested in focal infections when working with Dr. Billings, but naturally a good deal of that work did not concern the teeth, although some of it did. We were concerned largely with other foci, particularly the tonsils, and I was very glad indeed to be able to obtain material from foci about the teeth, because it was perfectly evident that this was a frequent source of disease. I might mention somewhat specifically some of the results that have been obtained in such examinations. Most of the examinations, it should be stated, were made by Dr. Baugher

at the laboratory. The material from a considerable number of cases was obtained, but I do not know very much about the clinical findings. Possibly Dr. Gilmer may tell you later something more about them. The material was collected carefully in sterile pipettes, and obtained fresh from the focus with as little contamination as possible from the surrounding structures. This is a very important point in dealing with the bacteriology of such a place as the mouth, where contamination is so apt to occur from the numerous bacteria which are always present there. There are two or three points I think which may be referred to.

In the first place, this material as it comes from the foci usually contains not one or two, but several kinds of bacteria; consequently difficulties arise in the way of isolating these germs and detecting which germ may be the cause of the trouble. However, in going over the records there is a certain degree of similarity in them. There was found numerous cocci which belong to the general streptopneumococcus group. In practically all cases—I think in every case—there was found bacilli of the fusiform variety. Others may occur. Frequently there were long thread-like forms, suggesting leptothrix, occasionally branching long bacilli; and most of these I will add are anerobic, that is, they fail to grow in the air. It is difficult or impossible to analyze and isolate each of these different organisms, test them in various culture media, subject them to animal inoculation, and so on. Undoubtedly, these germs are modified by growing together. If one were able to isolate each one of these different germs, and inject them individually into animals and determine their pathogenicity, I question very much whether the effects would be the same as when all grow together. Organisms growing in symbiosis, as we say, produce results which may be entirely different from the results produced by the organisms growing alone. This is another difficulty with which we are confronted.

However, every now and then we do know, as has been illustrated by Dr. Post, that sometimes one organism, sometimes another—the streptococcus or pneumococcus, or perhaps anerobic bacillus—will break forth from the dental foci, may localize in the regional tissues or produce a generalized infection, with very serious and perhaps fatal results, causing such conditions as meningitis, pyemia, septicemia, heart lesions, kidney lesions, and so on.

The subject of arthritis has been mentioned. We know that

the original focus in many cases of arthritis appears to be in the tonsil. However, I think it is true, occasionally at least, that the focus is present in or about the teeth. I recall speaking to Dr. Gilmer a year or more ago on this question and he said at the time that he was not sure that he had ever seen a case of arthritis where he was certain there was a causal connection between lesions of the teeth and the arthritic condition. He stated to me this evening that since then he has seen cases of arthritis which he had good reason to attribute to focal infection about the teeth. I might mention a case upon which Dr. Gilmer operated recently at the hospital which illustrates the cases that come in this group. A woman developed arthritis of the left knee-joint several months ago. At that time she also had a lesion of the mouth. She paid no attention to that, and when she went to her physician complaining of the knee, nothing was said whatever about the lesion in the mouth. While she was under observation the focus in the mouth again flared up and she developed a large swelling of the left jaw. Upon careful examination there were found two or three sinuses leading to infected foci in the jaw. Several days ago Dr. Gilmer extracted three teeth which were found to be badly infected, and upon carefully removing these teeth in sterile gauze and examining them, making cultures and smears from their roots, we were able to obtain together with a few other bacteria a hemolytic streptococcus which has all the properties of the streptococcus which occurs so often in the infected tonsillar crypts in cases of arthritis. We have not yet had time to work out the organism in detail. It has been injected into rabbits, but it is too early to make any statements as to the results. I have very little doubt that here we have the real cause and source of the trouble in this patient. Other cases might be mentioned.

There is one point I should like to call attention to, and that is, we should not relate lesions of the mouth to these generalized processes like arthritis or endocarditis, simply because these two conditions coexist. We know how frequently lesions in the mouth occur and they may be accidental or coincident with other processes and not related in a causal way. Consequently a thorough examination for other possible foci in the body should be made. We may frequently, for example, have infected foci in both tonsils and teeth, and the question as to which the general condition is due

may not be easy to decide. Hence the necessity in all these cases for careful physical, pathological and bacteriological examinations.

DR. EDWARD C. ROSENOW:

I am going to relate one or two things which may be of interest to you. You know that I have been especially interested in working out some of the biological characteristics of these various organisms that are obtained from cases of clinical endocarditis, a form of endocarditis that is by far the most common, and one that is particularly of interest to dentists because it not unusually follows very slight focus of infection about the teeth or gums. Sometimes that focus is so small that physicians have great difficulty in putting their finger on the point of infection. The germ responsible for this form of endocarditis has practically no virulence in the ordinary sense. You can inject it into a rabbit or guinea pig in enormous doses, and yet the animal will recover without being made appreciably ill unless you inject the dose intravenously and it happens to develop endocarditis.

I have here a number of specimens which illustrate how this microorganism which has no ordinary virulency is able to gain a foothold and produce a fatal endocarditis.

If you will pass these specimens around in the order in which I hand them to you, you will get the natural sequence. This is a specimen of a rabbit's heart that was injected twenty-four hours previously with a large dose of the microorganism in the vein of the ear. The tricuspid valve shows several small hemorrhages. In forty-eight hours these hemorrhages usually are faded and on microscopic examination are already found large clumps of bacteria, but few leucocytes. The other place where hemorrhages are found after the injection of the microorganism is in the glomerular capillaries of the kidney. Here where no lesions result, the area of hemorrhages are already surrounded by a huge infiltration of leucocytes at the end of twenty-four hours. The bacteria are digested by the leucocytes and all we have left is a little scar. Whereas in the heart valve, where blood supply is poor, the organisms grow in clump and produce the vegetation growth.

Here is another specimen of hemorrhage in the heart valve, one large and one small, that illustrates the same point. I will simply pass around one other specimen showing tricuspid hemorrhage. This is a specimen of a rabbit's heart twenty-one days after injection. In both valves the tricuspid and mitral, a large

growth is observed. We know that histologically the auriculo-ventricular valves of the heart have capillary supply, and it is easy to understand how we can get in these valves an endocarditis of embolic origin. It is not quite so clear how embolic origin of endocarditis of the semilunar valves may take place.

Here is a hemorrhage of the semilunar cusp which shows as a dark area, and another simply an aortic endocarditis where vegetation is seen to grow from the base.

Clinically this microorganism produces endocarditis which is practically always fatal, and is almost always engrafted on top of a previous injury to the heart valve.

The question comes up, what organism is the cause of simple endocarditis? Here we have no opportunity to establish this question because blood cultures are negative and because patients recover, it usually follows rheumatism or tonsillitis or some focus about the teeth or mouth. From my experimental results there are many things that indicate that this same germ may be the cause of simple endocarditis in the first attack. Scar formation with healing takes place and a fatal endocarditis in the second attack, because reparative processes are interfered with in the scarred valve. Simple endocarditis usually occurs in earlier life in the boy of nine, ten, or twelve years of age. They have a low grade fever and recover, but have a heart lesion.

I have had the pleasure of being able to produce in rabbits five instances of healing, scarring endocarditis by this microorganism. It is, of course, not proven, but it is of interest because we are able to produce both kinds—scarring, healing, sclerosing endocarditis with the same microorganism that will produce the fatal form.

This microorganism, as Dr. Davis has pointed out, is one of the very commonest about the mouth and teeth. I feel that there is one point that will be of interest to you. Remember, I cannot produce this endocarditis in old rabbits by simple intravenous injection. I must take half grown or undersized or young rabbits to produce endocarditis with any degree of regularity.

To you as dentists, there is this lesson: I believe it is of great importance to look after the teeth of the children, particularly the deciduous teeth. I wonder if it is not possible for infections about the teeth to cause this form of endocarditis, simple endocarditis, in the child. But the miserable thing about that simple endocarditis

is that it produces scarring, first vascularization, with a healing process, and then a scar, and that scar is the thing which predisposes the individual to endocarditis later. If we live to be thirty-five years of age without any damage to our heart valves, from then on there is not much danger of this form of endocarditis. That does not mean we may not have endocarditis due to virulent microorganisms following various severe infections, but an infection that is primary on a healthy valve by this microorganism is certainly very rare after thirty-five years of age. (Applause.)

DR. G. V. BLACK:

Mr. President and gentlemen, I came here this evening with some difficulty because I wished to hear these medical men talk on this subject. I have heard dentists all my life. I have probably spent more hours in the cultivation of microorganisms of the mouth than any other man in America. There are a few things about it that become very important if we are to understand it. First, what microorganisms are normal in the human mouth? To learn that one thing requires usually a good deal of time if one goes at it without instruction from somebody who has learned it. There are about fifteen varieties that are normal in the human mouth and with certain exceptions, always present. One-half of them can be cultivated, and the other half cannot be cultivated. But there are an enormous number of accidental microorganisms in the mouth. In a time like this, when there is an epidemic abroad in the land, we will find certain microorganisms belonging to that epidemic in the mouth of almost every individual, and particularly of the sick ones. I will tell you a little story illustrating that:

In 1891-92 I began work with the Northwestern University Dental School and was cultivating microorganisms, both from students and patients. I found a very large bacillus in one of the first mouths I examined. It gave a peculiar colony on gelatin, and gave a very peculiar growth, and clearly enough it was peculiar in its staining. It stained in rings like some of those rings we see on some of the algae, and the whole organism in staining made a most showy specimen. I found that organism in the mouths of everybody—students and patients—that whole year. The next year it was the same. The third year it was gone and I have never seen it since. But there are certain microorganisms always in the mouth. A strain of the white staphylococcus is always there. It accompanies caries of the teeth. It is the organism that is usually found

in a pulp freshly exposed by caries and often it is the organism in alveolar abscess that does the mischief. If we go on, we can always get in the skin, and if we carry that through rabbits or guinea pigs, we will find it is not very virulent, but if it runs through one course of suppuration, its virulence is restored usually. These things are a few simple facts. The organism, a short chain streptococcus, I cultivated over one quarter of a century ago and gave it the name of the organism of follicular sore throat. I found that only when there was an epidemic of sore throat prevailing. Just now you will find it in almost every mouth in Chicago, usually far back in the mouth rather than in the front of the mouth. These germs have curious habits about the region of the mouth they occupy. There are certain organisms which you will find only upon the buccal mucous membrane, rarely anywhere else, and so on with the others. They have a particular habitat in the mouth where we can find them very readily.

Now, as to the foci of infection, they are certainly dangerous to humanity. There are more persons suffering from injury prospectively, limiting their usefulness as citizens from diseases of the teeth, directly and indirectly, than any other disease of which we know, and men should be careful of the teeth because of that fact.

Let me tell you another little story; quite a number of years ago an oculist sent me a patient with inflamed eyes, whom he had been treating for weeks with the hope of bringing about a cure. He did not think it was trachoma, and was uncertain as to what it was. I examined the case and found a staphylococcus in the eye. The patient had a small abscess on the root of an incisor, which swelled out a little every few days. She broke that with the finger. The staphylococcus was in the abscess, and she was rubbing her eyes with the same finger. I put an end to that very quickly, and the result was her eyes got well in a few days. These little things, if we could work them out and know them when we come to them, would help us wonderfully.

I want to say to the dentists who are here that I have been objecting seriously to these long drawn out efforts at curing pyorrhea alveolaris. Of all the things that is one among the worst, to keep a patient continually draining pus from these practically hopeless cases for years, and expect them to retain good vigorous health. These patients become anemic and sick in spite of treatment, and we are doing wrong, and I think Dr. Hunter was right when he gave

the dental profession a leashing for allowing these foci of infection to continue in the mouth. (Applause.) We had better lose teeth and make plates with which patients can chew food and do it quickly, than to allow these things to run on from year to year and have the alveolar processes melt away, for when such a patient does lose his teeth, his mouth is in no condition for a good set of artificial teeth, because of the loss of the normal alveolar ridges. He is in trouble for the rest of his life. We should not let these things continue.

Another difficulty which is not a small one in its effect is the little suppuration about bands that do not fit, and the crown that covers up a lot of nastiness, and all that kind of thing. I have been chagrined and ashamed of what I have seen in the mouths of some patients.

Now, gentlemen, after listening to this talk I hope you will go home and that the best of you will be more careful, and the worst of you a whole lot more careful and try to know more about these things. Dentists do not palpate the cervical glands half as often as they ought to, and find where the soreness is that comes from this focus of infection in the mouth. Neither do they inquire carefully enough where it is going through this chain of glands or make sufficient efforts to stop it quickly. This is about all I have to say now on this subject. (Applause.)

DR. THOMAS L. GILMER:

I have said so much on this subject from time to time, that I am afraid I may have been considered a bore. I do not intend to say very much tonight because we have been taught a serious lesson by these gentlemen. We should take away the valuable thoughts presented with the least contamination of it by irrelevant discussion. The paper read by Dr. Post is the most valuable contribution of its kind that we have had. The discussion of the subject by Drs. Billings, Davis and Rosenow, could not have been better.

It is a little humiliating to dentists that this coterie of gentlemen, in seeking for the causes of certain lesions of the body, have traced the source to our field of operation. The dentist, as a rule, observes the diseases of the body from one point of view and the general practitioner from another. It is not probable that the dentist will have presented to him cases of endocarditis, or cases of arthritis. Such cases go to the general practitioner and he is supposed to ferret out their cause. These gentlemen, all working together

under the guiding influence of the master mind, Dr. Billings, have traced the cause of some of these lesions to foci of infection in the mouth. With the aid of Dr. Davis and his assistants at St. Luke's Hospital, I have been endeavoring to determine the bacteriology of chronic alveolar abscess, and also to determine the nature of certain serious infections which occur about the angle of the jaw. We have not examined a sufficient number of cases as yet to give any positive answer, but find the organisms are very generally those which are responsible for the lesions indicated in Dr. Post's paper. There is difficulty in getting the pus from jaw abscesses free from mouth contamination; this is why we have not had more cases, so far not over a dozen.

I have seen one case of endocarditis as a result of infection of the foot, followed by embolic showers, which resulted in a lung abscess. If an infection of the foot sometimes gives endocarditis, why may not infection of the jaw produce the same result? I might cite a case which I saw only a short time ago which may be of interest. A gentleman came to me who had lost all his teeth from pyorrhea, excepting one. This tooth was very loose and pus could be expressed from between the gums and the tooth. He told me he had been having frequent attacks of rheumatism. He had an arthritis of the knee joint at this time and it was with difficulty that he could walk. He had been confined to his room for several weeks, but was sufficiently recovered to come to my office. I suspected that the tooth might be a cause of his trouble and removed it. In the course of three days he had a severe relapse. This was followed by rapid improvement of the knee lesion so that he was able to walk without his cane. He is in better health today than he has been for years. He is a Christian Scientist, so do not know whether his cult or the extraction of his tooth will be given credit for his recovery.

In answer to Dr. Davis' question as to whether I have seen, since our previous conversation, an arthritis which could be attributed to jaw infection, would answer, I have several. Some dentists and physicians are unwilling to admit that oral infections can be a cause of lesions in other parts of the body, since they see these infections so often in the mouths of their healthy patients with no seemingly ill results. They do not observe sufficiently to know what does sometime happen as a result. They do not consider the matter of immunity and susceptibility. They do not know that a patient

well today may not be well week after next, that bacteria may not at one time have the opportunity of producing some of distant lesions, because the patient is immune to their influence. They do not realize that at one time the heart may be sound and at another time that there may have developed a slight lesion of its valves, which make it susceptible to bacterial invasion, and an endocarditis develop as a result. There may be some slight injury of a joint which before might have been immune to bacterial influence, but this injury make it susceptible.

The dentist should remember that when he thoughtlessly destroys pulps of teeth, he is jeopardizing the health and lives of his patients. When he destroys pulps of teeth for the purpose of making bridges; when he extracts pulps for the purpose of making crowns or what not, he is rendering teeth thus treated susceptible to infection, since it is impossible to fill the roots of all teeth completely to their apices. Dentists should see their patients sufficiently often and early in order that they may fill their teeth before the pulps are exposed.

We have listened with much interest to the discussion of this subject and are deeply indebted to these gentlemen for their presence and helpful teaching.

DR. TRUMAN W. BROPHY:

It is especially gratifying to have been present this evening and to have heard these eminent men who have discussed so fully this great subject of oral prophylaxis, for it all resolves itself into that topic.

I remember very well not many years ago when it would have been impossible to have enlisted the interests of medical men and to induce them to come to a meeting like this, on the ground, as they believed, that the work of the dentist was pretty largely mechanical, and that the question of pathology was a small factor to be considered by him. Today it is different. The statements made in the paper and the discussion which has followed, point to high ideals of knowledge in the treatment of dental and oral diseases.

We must consider, and we must not get away from the fact that the mouth is the greatest of all centers of infection. Long ago I arrived at the conclusion that the tonsils become infected secondarily. We know that the teeth more than any other tissues of the body are involved in disease. We know that the destruction of these tissues leads to the formation of infectious material which may ex-

tend to any part of the body, and we know that the tonsil gland, so closely associated with infected teeth, is often involved, as in the case of other adjacent tissues.

When we take into consideration this fact we feel that the time has come when the internal medicine man, instead of administering drugs to his patients for the relief of certain ills, should do the wiser thing—get at the foundation of the trouble. He should ascertain where the source of infection is, and then have it removed.

Gentlemen, I know from experience extending over many years, that oral prophylaxis twenty-five or thirty years ago was not generally considered by medical men. I know from observation in the dispensary and in clinical work that my confreres were administering medicines for the relief of diseases which had their origin within the mouth, diseased teeth, and yet the teeth were not considered at all. They were overlooked.

Now it is different. With the improvement in teaching and with the establishment of chairs of dental pathology and surgery in schools of medicine, students are now graduated with a fair knowledge of dental pathology and dental surgery, whereas many years ago students went out of medical colleges without any knowledge whatever practically of dental diseases.

For thirty years or more I have been a teacher in a medical college and I know whereof I speak. Many of the students did not take the course in dental pathology and surgery, which were optional, consequently, they went out without being able to make a differential diagnosis of such common diseases as pericementitis, pulpitis, and dento-alveolar abscesses, or of the infection which occurs in the establishment of osteitis.

These students did not know very much, if anything, about those conditions, and yet they graduated, and when these morbid conditions came before them in the management of their patients, they gave them medicine internally because they could not make a diagnosis.

But today, I am glad to say, every progressive medical college is doing something to educate its students along these important lines.

The most important subject before the medical world is preventive medicine, and there is no more important phase of it than prophylaxis. If we are able to establish and maintain a certain standard of oral prophylaxis, the human family will be relieved of

one of its greatest troubles, and that is the source of infection which brings about so many maladies which have been described.

Some one has pointed out that there are a hundred and twenty-five diseases that have their origin in the mouth. Does it not show that the men who have worked so hard to teach the profession and the world the importance of this work in keeping the mouth in a cleanly condition are greatly benefiting humanity?

Dr. Billings said that he finds the mouths of patients are not clean; that they are far from clean. Who is to blame for it? It should be a matter of education, and it is a matter of great pride that we can go back to Germany where a little spark was lit by Professor Jessen, many years ago, in establishing a dental infirmary in the public schools of Strasburg.

The movement he inaugurated has swept all over the world. In the city of Chicago alone 500,000 children need care from a dental point of view. It is a matter of great pride, furthermore, that the Chicago Dental Society has contributed so much towards the relief of suffering humanity in bringing about work for the care of our school children. This question before us now—sepsis, infection—is the greatest of all questions before the medical and surgical world.

Dr. Davis has pointed out how these pathogenic microorganisms may be manifested later at points quite remote from the place of origin. We know that is true, and we all of us feel grateful to these gentlemen for coming here and helping us to bring this subject out more conspicuously and we trust that the work they have done will reach a greater audience and that the fruits of their labor will be abundant.

I believe the work of Dr. Post and his confreres in the medical profession in emphasizing the importance of oral hygiene will do more to prevent disease and to benefit the human family than all the drugs that drug houses in this and other countries have been able to manufacture. (Applause.)

DR. W. H. G. LOGAN:

The question that has been brought before us this evening is the one of Oral Infection, and it has been maintained that we understand it. The next question is, what have we been doing about it, and what are we going to about it? That is a question the medical men would like to know.

Dr. Black said it was our duty to extract teeth in cases where

there was pyorrhea; it was our duty to extract teeth where there were chronic alveolar abscesses. I believe the teaching of the dental profession should be that we should treat these cases and cure them rather than extract the teeth and make plates as our grandfathers in the profession did. It is our duty, first of all, to understand the case, and if it is determined that we cannot save the teeth, then we should extract them. In other words, we must control the condition with the teeth present, or we must control the condition by extracting the teeth.

I would answer my question, what is the dental profession doing about educating itself and the public in relation to oral sepsis? Two years ago there was started a movement where a physician in every district in the State of Illinois was to be invited to appear before the dental profession and educate them, as you gentlemen have done tonight, on the relation that exists between oral infections and general disease. That movement was carried on last year, and is being carried on over the state this year, and the appearance of these gentlemen here tonight is simply the appearance of men before this society to discuss some of the questions that are being discussed throughout the entire state. Now, after that is done, what else are we doing? We discussed first the importance of it, and then we have followed it up with a dentist, and in most cases the dentist and medically trained man appears before the dental society that the medical man appears before, and the medically trained dental man discusses the diagnosis and treatment of oral infections, especially the question of controlling the local foci which result from alveolar abscesses and pyorrheal conditions, also the question of diagnosis and treatment.

What are we going to do after that is done? We are going to ask for the opportunity of allowing members of the dental profession to appear before every medical society in the State of Illinois and speak on the question as to the importance of caring for these diseases as we understand them.

DR. C. F. HARTT:

I do not exactly wish to discuss the subject that has been brought before us, nor do I want to tell you a fairy tale. A friend of mine, a gentleman eighty years of age, some years ago had a number of loose teeth. He went to a professional friend of mine and said, "I do not expect to live more than a year longer, but a year's comfort will be worth a great deal to me." The dentist

wanted to pull the teeth out. The man objected and came to me. I managed to fasten his teeth so that he could use them. Three years afterwards he was still alive. The roots had tightened. He came into the office one day and said, "I have come around to thank you for saving those roots, because every other dentist in town wanted to pull the teeth out."

DR. H. A. POTTS:

I think it ill becomes me to follow the older and wiser heads in the discussion of this paper, but since I have been asked to take part in this discussion I will say a few words.

The subject has been very clearly put before us, and if the dental profession will only grasp the ideas that have been presented tonight, it will certainly revolutionize dentistry in its service to the public. The advantage of the dentist to the physician was pointed out by Dr. Billings, also the necessity of team work. Dr. Billings spoke of cases presenting and by exclusion a diagnosis being made of something wrong with the teeth, then having the dentist clear up the matter. The clue to be taken from that, from a dental standpoint is that the dentist understand and realize the dangerous possibilities which lurk in chronic abscesses and in pus, the absorption of toxins, and let him pay more attention to the common occurrence of these things in his every-day practice. He should find out, if possible, whether chronic abscess is present or not, and if so should treat the teeth either by extraction or amputation of the root. It seems a fallacy to try and force an escharotic through a fistulous tract, immediately fill it, and expect the escharotic to care for the mass of connective tissue which is reeking with infection, expecting healing to take place. Gentlemen, it does not do so.

I will say for the benefit of Dr. Post, in regard to the case he mentioned of thrombosis of the central vein, that it was my privilege to remove the bridge which was foul, although it was cut out and sufficiently arranged that the central portion of the bridge could be easily cleansed. The bands or crowns carrying the bridge were poorly fitted and the crowns were practically destroyed, although the bridge remained in place. There was a chronic abscess at the apex of the bicuspid carrying the bridge. This communicated with the oral cavity alongside of the tooth. At the apices the two buccal roots of the molar, which were fused, there was another large chronic abscess.

DR. J. P. BUCKLEY:

As the hour is getting late, I shall have only a word or two to

say. I was especially gratified tonight, although it probably ill becomes me to say so, being a dentist and not a physician, to hear Dr. Billings' statement with reference to the results from the removal of tonsils. A medical friend of mine, knowing that I was interested in oral surgery, asked me to visit a certain hospital in this city, and to me it appeared like the tonsils were being removed miscellaneously. I wondered if it was necessary, knowing as little as I did about it, to remove all of the tonsils that were removed from children that made their appearance there at the clinic that afternoon. Deep down in my heart I believe it was not, and tonight Dr. Post or Dr. Billings has told us that a large tonsil does not necessarily mean an infected tonsil, and that a small tonsil does not necessarily mean a healthy tonsil.

Dr. Logan asked what are we, as dentists, to learn from a meeting of this kind? One of the things we have learned, if we take advantage of our opportunity, is that we, as members of the dental profession, will stop closing our eyes to the presence of chronic alveolar abscesses, and telling our patients to let them go as long as they cause them no immediate discomfort. That is the thing dentists have been telling patients in years gone by. Almost every dentist in this room tonight can recall cases of chronic abscesses in the mouths of patients that were discharging pus, manufacturing toxins about the roots or the apices of the teeth, and some dentists have allowed that manufacturing process to go on, allowing the toxins to be absorbed by the blood stream and be carried throughout the system simply because there was no pain or manifestation on the part of the patient. If we dig down deep into this subject, after hearing this paper and the discussions, and if we will read the various papers that have been written and read by medical men before dental societies throughout the state, we must know that it is our business either to cure by means of therapeutics, and you can cure abscesses by means of drugs, or by means of surgery, and you can cure many chronically diseased teeth by means of surgery that you cannot cure by means of drugs, but if you cannot cure an old chronic abscess in the mouth of a patient either by means of therapeutic agents or by means of surgery, if you cannot retain the tooth or teeth in a healthy condition, then by all means adopt a surgical procedure for the purpose of curing the abscess by extracting the tooth or teeth. Everyone of us, almost without exception, have had teeth in the mouths of patients which we know, after having heard this paper, should be extracted.

I was just a little disappointed in hearing the cheering which followed the remarks of Dr. Black when he made the statement that "Hopelessly diseased pyorrheal teeth should be extracted." We all agree with that. A tooth that is diseased with pyorrhea or pyorrhea associated with that tooth, if it is a hopeless case, the tooth should be extracted, but the thing we should do, and that which many of us have not been doing in the past, is to recognize pyorrhea in its incipency and not let these teeth get hopelessly diseased. (Applause.)

What is the information a patient receives from the average dentist with reference to pyorrheal teeth? Simply that nothing can be done in the way of treatment, giving the patient the advice to let these teeth go on, to keep them in the mouth as long as he can, and then have them extracted, because at that time they are absolutely of no use, and then to have an artificial denture made. I make a plea tonight, which Dr. Senn always made when he arose to discuss a dental subject, namely, that dentists study and delve more deeply into pathology, learn to recognize these diseases from a pathologic standpoint, then we can make a correct diagnosis and apply our treatment accordingly. It may be necessary to extract teeth, but it is unnecessary to extract as many teeth as we are forced to do today if we simply recognize these conditions in their incipency and treat them accordingly.

One of the statements made by Dr. Gilmer tonight, which teems with common sense, is with reference to the miscellaneous removal of dental pulp. There again it is necessary to study the pathology of the pulp, as is the case when symptoms are manifested from any other organ, it is necessary to determine whether we can institute proper treatment and save the pulp, or whether it should be removed. Dentists remove pulps far too ruthlessly. Because a pulp is diseased, and not knowing the extent to which it is diseased, they do not take advantage of their knowledge of the pathology of that pulp, and they are taking no chances, they think, when they are removing the organ. Dr. Gilmer has told you, not in these words but in substance at least, that it is perhaps not the easiest way, or not the best way, considering the viewpoint of the patient to remove the pulp. If we have a single rooted tooth with a large canal, and the pulp can be aseptically removed and the root-canal thoroughly filled to the apical end, it would be the best method of procedure to remove the pulp if there was any question as to retain-

ing its vitality, but when we have to consider multi-rooted teeth, many of the canals of which are fine and tortuous, it is impossible to fill every root to the apical end. It is impossible, as Dr. Gilmer has said, to fill the canals of teeth to the very end and no farther. In many teeth we find fine tortuous canals, and it is our duty to preserve the life of a pulp, where the clinical symptoms indicate that its life can be maintained.

I know that this audience assembled here tonight appreciates more than these medical men realize the great sacrifice that these gentlemen have made to come here and enlighten us upon this subject, a subject which we need to study more than we have in the past, and I for one want to voice my sentiments as a member of the society when I say we should and do thank these gentlemen for their appearance here and for the sacrifice they have made.

DR. FRANK W. BAKER:

A young woman had a swelling of the knee it appears, and when the case was brought to my attention I suggested it was probably a case of infective arthritis, and the history was, when we looked into it carefully, that there were sinuses, but these were not apparent upon ordinary examination. There was no pus present. Through the assistance of Dr. Davis we isolated the streptococcus viridins. This woman had been anemic for twenty years. She was a trained nurse at the Michael Reese Hospital. The doctors found that she was anemic, and all of them tried to cure the anemia. From the history given, she had at that time alveolar abscesses which were discharging pus. She has had these for many years, and at the present time there is no pus present upon cultures being made. She has a stiff neck and a swelling appeared in one of the joints which was preceded by pain in the muscles of the leg.

DR. W. E. POST (closing discussion):

The subject has been so thoroughly discussed since the paper was read, that I do not desire to make any further remarks other than to thank you very much for the heartiness with which you have received my paper and the courtesies you have shown us all.

THE WISCONSIN STATE DENTAL SOCIETY, OSHKOSH,
JULY 9-11, 1912.

DISCUSSION OF THE LECTURES OF DRS. BLAINE AND EISEN.

DR. HALL:

Mr. President, my experience in that line has been rather small. The skiagraphs certainly show the conditions very nicely, and I have had a little experience in the way of diagnosis by a means which has proven very satisfactory. So far as any direct questions or information of importance, I do not know that I could suggest any. There are a great many cases where it would be more than interesting to see the results obtained after the correction of some of these conditions which the skiagraph has disclosed, and of course it is probably presupposed that in all cases where corrections can be made, they can be made properly and no bad after results. From the diagnostic standpoint certainly the X-Ray has brought into our profession something that is of more importance than we have ever had before, and I wish to thank the gentlemen for bringing this subject before us this evening. It has been of great importance to me, and I trust it has been of great importance to all the society.

DR. ROBINSON:

I would like to ask whether there is any danger from burns, and if so, what precautions are necessary to avoid it?

DR. EISEN:

That depends upon the length of the exposure. In low-powered machines it is somewhat more dangerous than in high-powered machines. I have been very careless about it. My brother and myself do our own skiagraphic work, and while he goes into a red room, while he works the machine, I expose myself unnecessarily. I have made up my mind not to do it any more, and in the future I shall make the patient hold the film; although with the rapid exposure, one second or two seconds, there is very little danger. If you do a great deal of skiagraphic work, half a dozen or a dozen skiagraphs a day, there is danger, but I have not done enough to become afraid yet.

DR. ROBINSON:

How in regard to the patient—is there any danger to him?

DR. EISEN:

No, there is no danger to the patient.

DR. KUHNMUENCH:

Can you diagnose a case of non-eruption resulting early in life? The case in particular that I refer to was one of infantile scurvy.

DR. EISEN:

In infantile scurvy or scorbutis you can often make a diagnosis later in life as to the reason for non-eruption. It is often the case that the tooth germ is destroyed; and in the case that Dr. Kuhnmuench referred to, I believe a diagnosis was made of infantile scorbutis after the skiagraph had been taken. I mean, that the true condition of affairs had not been determined prior to that.

DR. BANZHAF:

I would like to ask Dr. Eisen a question. To what extent, and what has been your experience in diagnosing pulp stones with the aid of X-Ray pictures? What do they show?

DR. EISEN:

They show a shadow in the pulp chamber, or wherever it is found. I had a case the other day, a woman that had been suffering with neuralgia for some time, and I referred her to several men to relieve her. The last man I referred her to was a nose man, and he took out her middle turbinator and tried to alleviate the trouble there. After they all got through I made up my mind there might possibly be something in the teeth, and I took a skiagraph and showed a pulp stone in the upper right second molar, and the pulp was opened and taken out. It has been too short a time to tell whether that was the real trouble or not, but she had a pulp stone.

DR. BRENNER:

I had a case a short time ago of the lower right deciduous molar, of which we took a skiagraph, and where there seemed to be a considerable exostosis of the ends of the roots, at the same time being hooked. I would like to get some light on that tooth in the way of what may be the future outcome of the case. I crowned the tooth so as to maintain the proper relation of the teeth, in case future trouble should arise, that there would be sufficient room to extract the tooth. Now, I wonder if that tooth will ever cause trouble and if it does cause trouble what way will there be of relieving it? We have here several competent orthodontists, and I think it would come more properly in their line, and I would be pleased to hear from some of them.

THE PRESIDENT:

Dr. Federspiel, will you care to enter the arena? The question

is, as I undersand it, that Dr. Brenner has asked, will the exostosis be progressive?

DR. FEDERSPIEL:

Mr. President, I feel that I could not accept the diagnosis as to it being exostosis. The question of dynamics of tooth movement, the physiology of tooth movement, and the appliance used in tooth movement, play an important part in the regulating of teeth. I know of many cases in years past where dentists have applied a certain amount of force, and yet have failed to move the teeth. The reason for that is because they did not understand the fundamental principles of tooth movement. I do not think that this case is an exostosis. There is no question at all but that that tooth could be moved, depending entirely upon the form of appliance that is used. Heretofore they have spoken of the impossibility of moving molars distally. Today it is as easy to move teeth distally as it is to move teeth mesially. I believe that any tooth that is apparently healthy, not undergoing any pathological changes, could be easily moved in any position. So, after all, the treatment depends on the pathology of the case, and my opinion as to treatment would not be worth much unless I knew of the pathologic condition that exists.

We must not depend too much on the X-Ray for diagnosis; and that reminds me of a case I saw a while ago wherein the diagnosis was empyema of the antrum, yet the case clinically proved to be a subperiosteal abscess of the antrum. While the X-Ray plays an important part in the making of a proper diagnosis, it only serves as an aid in arriving at a conclusion, so that I could not give a positive answer to Dr. Brenner.

DR. BLAINE:

About the danger of burns. There is a danger. Every time the X-Ray tube is in motion there is always danger. We must never lose track of it. If anyone of the gentlemen here would go down to some of the conventions of the X-Ray operators, men who were earlier in the game, you would see some horrible examples. But there is this much to remember: That owing to these cases we have found that we can protect ourselves in all instances. If you will observe that machine, there is a shield around it. That is composed of rubber in which is impregnated lead. That is opaque to the rays. There is a sample there, where only half a ray gets through. This apparatus has eliminated, not all danger, because there is always

a certain amount, but has greatly minimized the danger of burning both patient and operator. We now use a lead glass shield as well as a full lead shield, wherever possible, and when a patient comes to our office just that portion that goes through that particular part is the only part acted upon by the X-Ray. Anybody who uses an unshielded X-Ray tube is not doing it right.

AMERICAN DENTAL SOCIETY OF EUROPE, THIRTY-
NINTH ANNUAL MEETING HELD AT BRUSSELS,
APRIL 5 TO 8, 1912.

DISCUSSION OF THE PAPER BY DR. CUNNINGHAM ON "THE SUPER
MOLAR: A CERTAIN FORECAST OF THE FUTURE DENTURE."

DR. C. F. BÖDECKER:

Dr. Cunningham made two very important points, the first being the re-naming of the first molar. In every profession it was difficult to replace an old name with a new one, but he thought it ought to be done in the present case, not for the sake of the dentist but for the sake of the public. Many of the patients regarded the first permanent molar as a temporary tooth; its very position in the mouth caused them to think that and they were very often surprised to hear that it would not be replaced. By calling it the super molar its importance might be emphasized. With regard to soft food, it was an old subject of his. One could often see in the mouth of a patient which side was used for chewing food, because that was the most healthy side. One could not sufficiently impress upon a patient the truth that teeth had to be used. With regard to tooth brushes, the Zulus simply used a mechanical method of cleaning, by chewing a very fibrous wood stick into a sort of brush, and, of course, if Europeans would spend as much time as the Zulus in cleaning their teeth the teeth would certainly be clean. They chewed the wood by the hour. The appearance of white teeth was largely due, he thought, to the contrast with the complexion. The American habit of chewing gum was certainly not a pretty habit but he believed that by chewing gum the fissures of the molars and bicuspidis were cleaned of the bacterial plaques which collected in the deepest fissures; in fact, he believed chewing gum would remove them much more easily than the tooth brush, but he did not wish to be understood to say that everybody should chew gum. Patients might be told to use liquorice root. As

a child he used to chew a considerable amount of that and he believed it might have the same function as the tooth brush of the Zulus. With regard to hard food, did it wear down the cusps and in that way cause the teeth to become more self-cleansing, or did it simply remove bacterial plaques from the teeth and, therefore, prevent decay? It might be both. That a good deal of the decay started at the fissures was undoubtedly true, and if the fissures could be kept clean 40 or 50 per cent of the teeth would be saved. He found that bacteria were not the only factors of decay. The material of the teeth had something to do with resistance. Very frequently one saw disease in the proximal surfaces, yet one tooth decayed and one was sound. As to pathogenic organisms spreading through the mouth and causing decay throughout the entire denture, that did not often happen because some teeth remained, even teeth with fissures, and it could only be explained by local tooth structure. With regard to obviating decay of the fissures by filling them with cement, he did that himself in practice, not necessarily using mechanical cleansing. He thought good was done by treating the teeth very carefully and keeping the bur from them as much as possible, putting on the rubber dam and disinfecting them dry. The rubber dam was a cause of dread in many patients. It was quite true, as Dr. Cunningham said, that roots that had not entirely developed should not have the root canal treated. If the pulp was removed before the tooth had been closed the tooth had not more than a few years to live. Very frequently honey-combed teeth did not decay as quickly as might be expected, and the only explanation that struck him at the moment was that they came through into the mouth with the enamel imperfect, and believed nature attempted to shield the teeth from the invasion of bacteria by a more thorough calcification of the dentin.

DR. N. S. JENKINS:

Said it seemed a comparatively unimportant question what the tooth was called, but it was a question of very great importance how to enlighten the public as to the value of the first molar, the largest and most useful of all the teeth. It was also important to see to what an extent Dr. Cunningham had been carrying on his work in Cambridge. It had been his privilege to see that work and what Dr. Cunningham said of it was but a very modest and imperfect explanation of what actually occurred. The good effect of the institution was not simply local; it had become a standard for that

which it was hoped would be established in every other country. No words could express the amount of thought and intelligence and philanthropy and sustained endeavor that had been put into this admirable work, and although Dr. Cunningham modestly regretted that more had not been accomplished there had been that accomplished which was of far greater importance than the mere local improvement, for the matter had become one of world-wide interest. It was wonderful what a degree of instruction had been imparted to the common people by Dr. Cunningham and those who worked with him. He had read the rules that had been given to the boy scouts in Cambridge and amongst the points of interest were the following ten rules: (1) Clean your teeth at least once a day; (2) Always clean them after the last meal at night; (3) Use a small tooth brush with stiff bristles; (4) Brush up, down and across, outside and inside, and between the teeth; (5) Use a little soap and precipitated chalk on the brush if the teeth are stained; (6) Rinse your mouth out after each meal; (7) Do not illtreat your teeth by cracking nuts, biting threads or hard substances; (8) Chew plenty of hard food; (9) Keep a sharp lookout for black specks in your teeth and immediately you discover one go to your dentist; do not wait until it is a week old; (10) Clean teeth do not decay. What could be more intelligent and more practical than that and that was only a part of the work which their honored friend, George Cunningham had been carrying on with such success.

DR. G. A. ROUSSEL (Paris):

The most striking part of the paper was that in which Dr. Cunningham dealt with the first permanent molar and the damage caused to it owing to lack of mastication. If proper care was taken of the grinding surface of this molar from the age of six to the age of eight the decay was stopped and the tooth became absolutely sounder for the rest of life. All the damage was caused from the non-use of the tooth during the period of evolution. He advised his patients to use a very small brush and take very good care of the grinding surfaces when the teeth were not being used.

DR. G. FAY (Brussels).

Thought that Dr. Cunningham had started on the right track in beginning dental hygiene in the school. The teachers were able to exercise more compulsion with the children than a great many parents were able to do. By beginning in the school the children were accustomed to taking care of their teeth and in a great many

cases would be able to teach their parents. An experiment had been made by the Cleveland Dental Society and reported in *Oral Hygiene*. The experiments covered a period of one year with a certain number of children in the Marion School in the Ghetto, a school frequented by the very poorest of the children. Out of some eight hundred children examined only three had sound teeth. They selected the children with the worst teeth in the fourth to eighth standards inclusive and treated them for one year, teaching them how to clean their teeth, and they had nurses to supervise the work. They also treated teeth that needed treatment. A psychological examination was made of the children, both at the beginning and at the end of the year, and it was found that children had increased their mental faculties by 100 per cent, and their bodily health had considerably improved.

MR. W. BRUNTON (Leeds).

Said Dr. Cunningham's system put the dentist in his right place, namely, first. There were many arrangements now in force in England where dental treatment was under the direction of the medical man, and against that he protested. The control of dental treatment ought always to be in the hands of the dentist.

DR. F. AGUILAR (Madrid).

Exhibited a copy of a journal containing an interesting picture showing 3,000 children assembled in Barcelona to receive prizes in a competition for cleanliness of the mouth. In Spain they had been trying to copy Dr. Cunningham's efforts in propagating oral hygiene amongst school children, and they obtained from the municipality of Barcelona the appointment of ten dentists to look after the children. The payment was only 500 francs a year to each dentist, but they were a body of altruistic men who were doing the work, not under the supervision of medical officers, but on their own initiative, and in order to impress upon the authorities the importance of clean mouths a subscription of 500 dollars was raised from different manufacturers and given as prizes to children who kept their teeth in the best condition. 3,000 children were got together at the Crystal Palace at Barcelona and 700 prizes were given to those who had their mouths in good order. A photograph was taken of the children and was reproduced in the illustrated journals of Spain and thus carried all over Spain a lesson on a very important subject.

DR. GEORGE CUNNINGHAM.

Briefly replied to the discussion. He said he did not want to

change the name of the tooth in the text-books but only in public literature. With regard to the Zulu toothbrush, the nearest approach to it in Europe was the dragon-cane which, when frayed out at the ends, made an admirable toothbrush. He thought the work Dr. Aguilar had done was excellent but in Cambridge no money was given to the children. He was proposing that they should wear a button as a badge with "S. M.," meaning sound molars. Toothbrushes were given as prizes. Sometimes the boy scouts were sent out in the garden to find something similar to dragon-cane and taught how to produce a kind of toothbrush. If the Children's Health Association should give prizes to children who had the best set of teeth he should be sorry for the man who took upon himself the duties of judging. Liquorice root was a very important suggestion and should be investigated, and he did not think the sweetness of the root would do much harm. Workers in sugar factories had very good teeth, probably due to chewing the sugar cane. He agreed that the rubber dam should not be used with children. In England the work had been carried on in spite of the medical men and the government, who put obstacles in the way and only gave a permit for two years, but at the end of the third year the government were representing Cambridge as a model for the rest of the country. In America at the present moment there was a perfect rage of altruism on behalf of oral hygiene. He was one who advocated the services of a paid dentist because in that way the work could be controlled and the man who was doing the work could be supervised much better than the man who was doing the work for nothing.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

THE RESPONSIBILITY OF THE DENTAL PROFESSION.

On several occasions the editor of this journal has expressed himself as being deeply concerned over what he conceives to be a critical period in the history of the profession. There never was a time when dental matters were so much to the front in the eyes of the people as they are today. A wave of interest in oral hygiene has been sweeping over the country everywhere, and this subject is being discussed in the lay press more generally and more intelligently than ever before. Various methods are being employed to educate the public in matters of mouth hygiene, the latest through the medium of motion pictures as inaugurated by the National Mouth Hygiene Association. People of high rank in the world's affairs are becoming interested in the subject, and are lending their indorsement to various schemes for enlightening the public on this most important matter.

This is directing attention to the dental profession in a manner to involve responsibility with which we have never before been confronted. There is really a very serious side to all this. If dentists are to be known for what they are really worth to the community they must measure up to the requirements of the situation and meet the issues which the new conditions create.

By this we mean that they must become more alert through reading, study and professional intercourse in solving the various problems which are daily confronting them. The one great crying need which we see in the profession is a better faculty for diagnosis. It is rapidly being borne in on us all that many of the pathological conditions which confront the dentist are associated with other

agencies and parts of the body than those with which we are brought directly in contact. We must learn to look at something more than a little hole in a tooth. We must see the significance of reflex disturbances, and be broad enough to recognize the inter-relation of other diseases with those of the teeth and mouth. We must demonstrate to the medical profession and to the public that we are not simply "tooth carpenters," but that we have a comprehensive grasp of the various factors involved in the health and longevity of the human race. We must not content ourselves with merely repairing teeth that have decayed, but we must be more persistent in searching out the cause of decay and learning the best means of preventing it. We have suffered from a surfeit of mechanics, and must now turn our attention to problems of a different nature. Not that we shall be less mechanical but that we shall combine with our mechanics a higher order of scientific thought, to the end that our ministrations to patients shall be more intelligent and impressive.

Not only this but the time has arrived for the dental profession to come out of its shell and extend its usefulness beyond the bounds of private practice. We should develop a community interest as well as an individual interest in our work. Great movements are in the air for the care of the children, and the suppression of preventable diseases. We all know how significant the teeth are in the maintenance of health and the prevention of disease, and the time is coming—in fact, it is here—when the dentist must take his place beside other philanthropic men and women in voluntary service for the public good. In the public institutions where free dental service is being introduced the dentist must be found abreast with the medical man in his sacrifice for the community welfare.

Physicians have from time immemorial been noted for their charity service to the poor, and this of itself has tended to raise the status of medicine beyond that of most other callings. Dentists must learn the fundamental lesson that in order to be recognized as truly great it is necessary to reach out beyond the bounds of personal interests and take a hand in those community movements which have for their object the relief of human suffering and the betterment of the race.

The time is ripe now for an awakening on the part of the profession as to its real responsibility, and if we neglect our opportunities in this regard it will set us back in the estimation of the people more than all the ground we have gained.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

Continued from the January issue.)

CROSSING THE EQUATOR.

The equator has been overdone. I have heard of it ever since I was a boy, but it isn't so much after all. It has had some excellent press agents, but the show itself isn't up to the posters. I am not complaining—I am simply stating a scientific fact. As a matter of course I was perfectly delighted to know that I had really crossed it. Here is an extract from that diary of mine:

"Sunday, June 23.—Just crossed the equator. I was wonderfully impressed by the experience, except that I didn't know when I crossed it. But it was fine! The sun rises promptly at 6 and sets promptly at 6 in this region, and does business all the time it is up. It chops things evenly into day and night, showing an impartiality the year round that is most commendable. The captain just tells me I am in another hemisphere—a sensational thing to think of. We are four days from Honolulu—everything is measured from Honolulu now. We have just gone over the ridge and it will be down hill from this on.

"There was formerly much horse play on board ship in crossing the equator. Father Neptune in the form of a sailor or daring passenger was brought up out of the sea streaming wet and with a razor several feet long proceeded to shave some luckless landlubber who had been extensively lathered for the purpose. These antics were for the purpose of breaking the monotony of a long ocean voyage, but that is not necessary now because there is no monotony. Deck sports and entertainments of all kinds have been inaugurated, and there is something doing every minute."

That is quite a long entry but it falls short of telling the whole story. It says nothing about the sunsets and the sunsets hereabout on the Pacific are something to marvel at. Remember there is almost no twilight. The sun just drops for its evening bath into the water far out to the West, and in a few minutes it is dark. But, oh, those few minutes!! Such a glory as the sun paints in the sky before and after it dives can never be imagined. I had heard

much about the sunsets on the Pacific, but there is something in this ocean atmosphere at the tropics which can never be described. I do not wish to belittle the sunsets, and in particular the sunrises, at home. I have never seen anything more brilliant anywhere than the sunrises over Lake Michigan, out of my own bedroom window. When we get to chanting about other climes we are quite inclined to forget the beauties at our domestic doorstep. But there is this difference—at home the displays are not so constant, while here in this part of the Pacific we could count on them nearly every day.



Our Party on the Makura.

Then the colorings are somewhat different. On the Pacific they are mellow—particularly the sunrises—with a larger massing of the golden yellows. The greens I saw were pale and apparently far in the distance, while the whole effect is more hazy and the tones softer. But sunsets and sunrises are beautiful everywhere.

The sky is higher here than I have been accustomed to, and the moon and stars are brighter. *So is the sun*, and I am going to advise my friends who come this way not to stand out in it very long. But this must not give the impression that we are suffering much from the heat. Awnings are up everywhere, there is a delightful

ocean breeze, and the electric fans are all running. I am told that it is not so hot right at the equator as it is a short distance to the north or south of it, but I haven't seen much frost in the immediate vicinity of the equator.

Things are straight up and down here—the sun at mid-day is directly overhead, and that is why it can hit you such a whack. We are favored by moonlight nights, the moon being nearly full, and it is glorious.

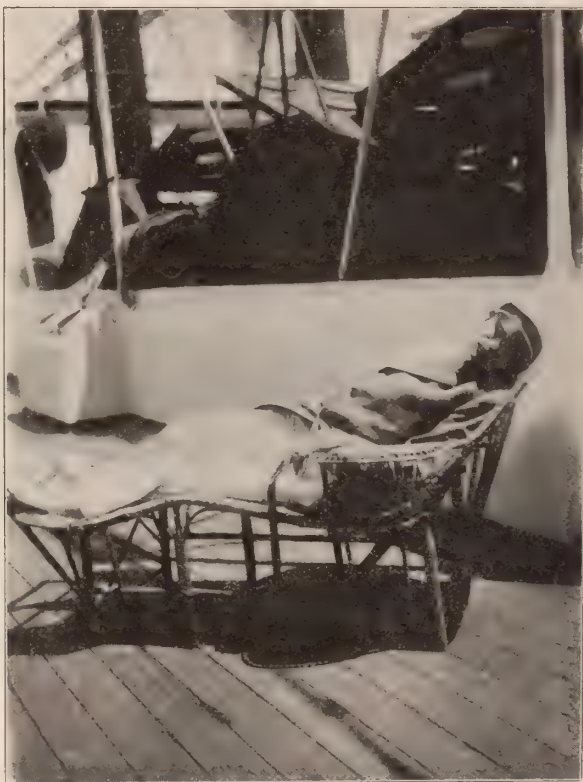
I have made a trade on this trip—I have exchanged the Big Dipper for the Southern Cross. I am going to play with the Cross for a while, but I think I shall trade back. The Cross is beautiful, but I have grown so accustomed to the Dipper that it is like an old friend. And then I do not wish to take the Cross away from our Australian friends. It is quite an institution with them and they are very fond of it—so much so that they have it on their flag, and it is wrought extensively into their jewelry. I admire their taste.

I am beginning to realize that we are some distance from home. My Indian Girl and I were standing out by the railing on the upper deck, watching the brightness of the stars and the brilliance of the moon, breathing our lungs full of that wondrous tropic air and reveling in the glory of everything about us, when suddenly she said: "It must be all a dream. I never believed it possible that I should see anything like this. It is all so wonderful and all so strange." The light in the eyes of those three girls has paid me for the trip already.

I have made a discovery on this voyage. I have discovered a new land, and it is on the water. I have been looking for this land as long as I can remember, but I never could find it till now. It is the Land of Laziness. A very observant reader may notice that I have described nothing of the trip from Honolulu to the Equator—four days gone glimmering. Not that there was nothing to write about, but that I was too lazy to write. If I was sitting in my "Den," which Mr. Read the steward fixed up for me, ready to do some very wonderful work and the Collector came along and said: "Now, Papa, it is so beautiful on the upper deck,"—away I would go, dropping everything. At home I would say: "Yes, I know dear, but I must get this piece of work done first." As if it mattered so much after all whether or not I got that piece of work done. We are too much inclined to think that the world revolves around our puny efforts. I have found out that this world is bigger than I

thought it was, and there is more water on it. I am going to get on this water after this as often as I can and—forget.

I have made another discovery on this trip—I have discovered the original hydroplane, and it seems to work very well. I had heard of flying fish many times but had never seen one before,



In the Land of Laziness.

and they have proved interesting as a study. As everybody knows they are a species of fish which can either swim or fly—or as the trotting horse man would say, they are double gaited. I had no idea they could fly as expertly as they can. They do not fly far, only a few hundred yards, usually much less, but they do it gracefully—skimming along the water and dodging the whitecaps with great agility. Sometimes they graze the crest of a wave, but they do

not seem to care. It is said that the moment their wings become dry, they can go no farther but must drop down in the water to get their wings soaked up so they won't leak. Sometimes the ship runs into a great many of them—I do not know whether you would call it a school or a flock—and then they go scurrying away, tripping over the surface of the water in every direction. One of them made a miscalculation one day and landed on the deck of the ship. A member of the crew caught it and we had a good look at it. It was about ten inches long and shaped like a herring, a



Sunrise on the Pacific.

really beautifully formed fish—plump and round. The wings seem to be merely an enlargement of the anterior fins which give the fish a grotesque look to one who has never seen it before. I asked if it was good to eat. Mr. Read said: "Certainly, it is a finely flavored fish. I'll have it put on ice and cooked for your breakfast tomorrow morning." Which he did, and we all enjoyed a taste of it. The Mater sent word to Mr. Read that he might catch all of that kind of fish that he wished, because it reminded her of one of our home variety.

Monday June 24, we saw a most marvelous sunrise, and shortly after that a white streak away up to port which proved

to be a coral island. With the glasses I could see some vegetation inland and a lighthouse on one end of the island. Great Christopher Columbus! Whoever could live on that island must have been either a martyr or a criminal. But I am glad some one is there to light up because it is a nasty looking reef. Later in the morning we saw several islands, one of them particularly beautiful. The Captain said: "Doctor, take your ladies up on the bridge and look at that." It proved to be, as most of these islands are, a doughnut shape with a large lagoon inside, and an outlet through the reef. Captain Gibb explained this to me. The coral reef, as every one knows, is formed by a tiny insect. The insect can work only in salt water, and the opening in the reef is merely the mouth of a river flowing into the sea, the fresh water from the river being death to the insects and thus preventing the formation of coral at this point. No one lived on the island, but it had a wonderful cocoanut plantation on it. They evidently plant the trees and then visit the island at times to gather the nuts. Some of these islands have nothing on them but birds, and the sole product is guano. A ship calls at certain seasons and gathers the guano for fertilizer.

I was up on deck this morning talking with Thomas, one of the best and brightest boys on the boat. The ocean was calmer than usual, with a slow shimmering swell, and as we looked at it Thomas said: "Yes, Doctor, they call that the peaceful Pacific, but we call it the sleeping devil. You can't tell what minute it will leap." In apparant consonance with his remark a dark line began to sweep the horizon, and in a short time we were in the midst of a tropical storm. The rain came down in torrents and the wind lashed it along the decks and drove us in. It was a grand sight and cooled the air and freshened everything up. It left the sea rougher than we had yet seen it, and the ship rolled beautifully. The Makura is a wonderful sea boat and seems to enjoy a bit of rough water.

Friday June 28th. A perfectly terrible thing has happened! The world has somehow slipped a cog and we have lost a day. Ten minutes ago it was Wednesday, June 26th. Now it is Friday, June 28th. The meaning of it is that we have just crossed the International Date Line, or the 180th meridian, where a day is filched from the calendar. The thing is uncanny. The Mater had stepped up forward on the deck to get a book, the Indian Girl was

somewhere amidship talking to a Dutchman, and the Collector and I were near the stern. With the *Mater* it was Friday the 28th, where the Collector and I were it was Wednesday the 26th, and as for the Indian Girl goodness only knows where to place that poor child. She must have been in a terribly mixed up mess of dates, but it was all over in a few minutes and she didn't seem to be much the worse for it. This business of snatching a whole day from a Chicago man like that won't do. He has too exaggerated an idea of the value of time to submit to it gracefully, and I am enjoying myself too much to throw away twenty-four hours of perfectly good time. If I do not get that day back on the return trip, there will be trouble for the date makers of this part of the world.

Speaking of time reminds me that my watch is having a rather trying experience on this trip. When we left home it was running along as contentedly as any watch in the world, hitting off the seconds, the minutes and the hours as regularly as the automatic riveter on a steel building, which is the most regular—and fiendish—thing I know of. It had gone on into the meridian of life without a serious setback, and had formed habits which apparently were to last the remainder of its days. But it has suffered a rude awakening. The first shock it had was west of Winnipeg where I had to set it back an hour. It was staggered a moment but finally picked up and went on singing away as courageously as ever. At Vancouver I was obliged to dampen its ardor by knocking it down for another hour. This seemed almost too much for it, but it finally recovered and took up its accustomed task. When we started out on the Pacific, the poor thing ran into the most discouraging experience. Every day there was something wrong with its reckoning, although it seemed to be doing its very best to adapt itself to new conditions, and I had to set it back. Between Vancouver and Honolulu where our course was about southwest, it had to go back a half hour each day. From Honolulu to Fiji it was more nearly south, and we lost a quarter of an hour a day, the rest of the trip it varied till by the time we reached Sydney it had been put back about twelve hours. Midnight at Sydney corresponds approximately with noon at Chicago, and this is a confusing thing for any self-respecting watch to comprehend. If I should send a message from Sydney early some morning to my friends in Chicago, they would get it the day before.

which is a hard thing to realize, and very disconcerting. I am getting all my beautiful traditions upset on this trip.

We had a young German on board who was on his way to Samoa to conduct a cocoa plantation, and that chap was a wonder. When we left Vancouver, he could not speak a word of English, but he settled down with a dictionary and showed us how to acquire a new language. With the aid of some of the lady passengers—he was good looking and it was not difficult for him to find teachers—he was soon speaking English in a wonderful manner. When I see the way those Europeans can pick up languages, it makes me chagrined to think of the trouble I have managing one. He went with us as far as Suva, Fiji, and the last we saw of him he was waving two handkerchiefs—both in the English language.

C. N. J.

(To be continued.)

BOOK REVIEWS.

EXTRACTION OF THE TEETH. By J. F. Colyer, L. R. C. P., M. R. C. S., L. D. S. Dental Surgeon and Lecturer on Dental Surgery to Charing Cross Hospital; Dental Surgeon to the Royal Dental Hospital of London; Member of the Examining Board in Dental Surgery, Royal College of Surgeons, England. 120 pages. Published by Claudius Ash, Sons & Co., Limited, London. 1912.

Dr. Colyer is so well and favorably known throughout the profession that whatever he says on any subject will at once be accepted as authoritative. This is the Second Edition of this little volume, and it deals in a very concise and satisfactory manner with the subject. No words are wasted on useless detail, and the book will well repay study by those who are interested in this subject.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 810 Masonic Temple, Chicago, Ill.)

To Repair Gold Crowns:—Holes worn in gold crowns may be repaired by grinding out hole to give good margins. Then fill in with inlay wax, invest crown with wax in position and cast, using same K. gold as the crown. Flow solder over plug on inside of crown and polish. The repair will not be visible.—*J. W. Gibson, D. D. S., Lancaster, Wis.*

Porcelain Inlay Technique:—In the construction of porcelain inlays, burnish a matrix in the cavity thoroughly, then force melted sticky wax into the matrix, filling it up flush with the margins. Chill and with slightly warmed instrument, attach to the wax and draw out the matrix entirely free from distortion.—*E. T. Tinker, D. S. S., Minneapolis, Minn.*

Don't Use Diseased Roots as Bridge Supports:—Make them healthy or remove them, extending your bridge to a healthy support. However, teeth or roots loosened by incipient pyorrhea or faulty occlusion are helped by applying a bridge where it acts as a splint; provided they are properly treated prior and subsequent to the placing of the bridge.—*J. W. Gale, D. D. S., Cologne, Ger.*

Removing Enamel:—Removing enamel on occlusal surfaces of teeth in preparation for crowns.—Use two, three or four knife edged carborundum discs mounted together and cut grooves as deep as the thickness of enamel to be removed. By keeping the discs moist, this can be done almost entirely without pain. With a chisel placed in the grooves, the entire occlusal surface can be chipped off.—*Herman A. Maves, D. D. S., Minneapolis, Minn.*

Natural Looking Bridgework:—In cases where there has been much recession of the alveolar process due to loss of teeth, the most artistic results can be obtained by shaping the porcelain substitutes in such a manner that the crowns are the same length as the crowns of the natural teeth on each side of the space and cutting the balance of the porcelain to simulate the roots as they would appear in cases of recession of the gums.—*O. DeF. Davis, D. D. S., Minneapolis, Minn.*

Repairing Bar Plate:—In drop bar attachment cases where through some accident the patient has bent or twisted the appliance, do not waste valuable time trying to bend it back into shape, but cut the bar diagonally at about the center, place the two separate portions in position in the mouth. Bend the two ends of the bar until they are parallel again. Hold the tongue down with mouth mirror and drop in just enough plaster of paris around the bar and along the lingual over the occlusal of the saddles to get the proper relation of each side to the other. Remove, invest, and solder.—*H. P. Boos, N. W. Dental Laboratory, Minneapolis, Minn.*

Contact Points:—It should be remembered that two or more contacts may often be tightened by the use of the separator and the building of one prominent contact. For example, if a case should present in which the contacts between the two bicuspid, between the second bicuspid and first molar, and between the first and second molars were slightly open, these might all be tightened by the placing of a mesio-occlusal filling in the first molar. It will not often be found necessary to cut a cavity in an undecayed tooth, as there will generally be a proximal filling in a neighboring tooth which may be modified.—*Arthur D. Black, D. D. S., Chicago, Ill.*

A Case in Practice:—An abscess discharging on the buccal surface, opposite upper first bicuspid. X-Ray showed its coming from this tooth but I was unable to force any solution through the roots, so placed wires in root canals and had another X-Ray taken. This time it showed buccal canal open to the apex but the lingual only about three-quarters. Then it seemed that I had been deflected in opening up root with a drill, owing to a curve in the root, and I was making fine progress towards making a perforation on the

mesial side of the root. After searching for two hours for the last root canal, I finally opened up the lingual canal with a round bur, up to where the opening to the real canal must have been, according to the radiograph. I could not locate it still, even with the mouth lamp held so as to throw the light into the root canals. However, by placing the light inside the mouth along side the lingual root, it illuminated the interior of the canal so perfectly that in a very few minutes I was able to locate and open up the canal to the apex of the root and continue the operation.—*E. S. Best, D. D. S., Minneapolis, Minn.*

CORRESPONDENCE.

A NEW TERM.

To the Editor of the DENTAL REVIEW:

Before me lies a dental journal which contains an essay that is quite interesting from the number of peculiar ideas as stated by the writer.

"Extension for Prevention" is commented on in a way that at once shows that the writer is not only wholly but absolutely ignorant of what is meant by principles of "Extension for Prevention." The writer of this essay is like many other men in the dental profession, he also has only visionary ideas regarding something he knows nothing about, but he surely has as great an imagination as it is possible for man to have. Imaginations may be all very well but it is far better to know things, and know why you know them, than it is to rush into print about something that a person has not even a conception of.

On account of just this attitude, months ago I coined, used and shall continue to use, in my talks and lectures, this term, "*Extension for Immunity*." It at once does a number of things.

It is an understandable term. We at once can point to a margin that is immune and free from bacterial invasion, or else to a condition which is inviting bacterial invasion. It is the simplest of all terms for the purpose intended. All operations that are made in the various surfaces of the human teeth are either so made as to be free from bacterial invasion or they are made so as to invite bacterial invasion.

Wherever the term "Extension for Immunity" has been used, the men have instantly grasped the meaning conveyed and they have had their faculties awakened to such an extent, from the impression made, that greatest good has resulted.

With the use of Extension for Immunity, the foolish as well as useless contentions, that for twenty or more years have gone on and on, should at once come to an end, for only a most ignorant man would dare attempt a controversy about the necessity for applying Extension for Immunity principles.

E. K. WEDELSTAEDT.

N. Y. Life Bldg., St. Paul, Minn., Nov. 10, 1912.

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society held at 31 West Lake street, Chicago, the election of officers resulted as follows: President,

Geo. N. West; vice president, P. G. Puterbaugh; secretary, T. L. Grisamore; treasurer, F. E. Roach; librarian, E. D. Coolidge; two members on the Board of Directors, Wm. H. G. Logan, F. W. Gethro; Board of Censors, P. B. D. Idler, H. C. Peisch, A. M. Hewett. Yours truly, T. L. GRISAMORE, Secy.

IOWA STATE DENTAL SOCIETY.

The fifty-first annual meeting of the Iowa State Dental Society will convene at Davenport, Iowa, May 6, 7 and 8, beginning Tuesday May 7th at 9:00 a. m. Elaborate programs and lectures and a large exhibit will be presented. Further information will be furnished upon request to ethical practitioners of other states contemplating a visit to the meeting and to whom we extend a cordial invitation. Exhibitors desiring space should apply to Dr. Wm. Finn, Cedar Rapids, Iowa. C. M. KENNEDY, Secy., Des Moines, Iowa.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

Officers for 1913: President, Dr. Geo. O. Webster, Pariser Platz 1, Berlin; vice president, Dr. H. J. Moore, Guillolett-Str. 25, Frankfurt a. M.; secretary, D. G. H. Watson, Pariser Platz 7, Berlin; treasurer, Dr. E. F. Day, 82, Park St., Grosvenor Square, London; microscopist, Dr. C. F. Bodecker, Jr., Kurfürstendamm 220, Berlin. Executive Committee: Dr. Geo. O. Webster (chairman), Dr. G. H. Watson (secretary), Dr. H. W. C. Bodecker, Dr. A. Warren, Dr. E. D. Barrows, Dr. Wm. M. Griswold, Dr. O. Solbrig, Dr. H. C. Merrill, Dr. E. F. Day. Membership Committee: Dr. H. J. Moore (chairman), Dr. C. J. Monk (secretary), Dr. S. S. Macfarlane, Dr. W. M. Cooper, Dr. C. Rathbun, Dr. Kirk, A. Davenport, Dr. W. Hirschfeld.

DEATH OF DR. T. W. PRITCHETT.

Just as we go to press we learn the sad intelligence of Dr. Pritchett's death at Whitehall, Ill. on January 20th 1913. Dr. Pritchett had for years held a leading place in the profession of Illinois. He was at one time president of the Illinois State Dental Society, and was for years a member of the Illinois State Board of Dental Examiners. He was one of the stalwarts of the profession, and will be greatly missed. He had been ailing for some time, and the death of his wife which occurred only a few days before his is supposed to have hastened his demise. "One by one the leaves are falling."

THE OKLAHOMA STATE DENTAL ASSOCIATION'S POST-GRADUATE SCHOOL.

(The dental meeting that is different from others.)

The second annual session of the Oklahoma State Dental Association's Post-Graduate school, will be held in Oklahoma City, March 24-29, 1913.

The lecturers and demonstrators are to be, Dr. Thos. P. Hinman, of Atlanta, Ga., Dr. J. V. Conzett, of Dubuque, Iowa, and Dr. Martin Dewey, of Kansas City, Mo.

This course will consist of about 18 lectures and many practical demonstrations in Operative dentistry, Prosthetic dentistry, Crown and Bridge work, and Orthodontia.

All ethical dentists are eligible to take this course, and dentists from other states are cordially invited to the meeting, but will be expected to pay a membership fee.

For any information, address, C. R. Lawrence, Enid, Okla.

EXAMINATION OF DENTISTS FOR THE U. S. ARMY.

The Surgeon General of the Army announces that examinations for the appointment of Acting Dental Surgeons will be held at Fort Slocum, New York; Columbus Barracks, Ohio; Jefferson Barracks, Missouri; Fort

Logan, Colorado; and Fort McDowell, California, on Monday, April 7, 1913.

Application blanks and full information concerning these examinations can be procured by addressing the "Surgeon General, U. S. Army, Washington, D. C."

The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between 21 and 27 years of age, a graduate of a dental school legally authorized to confer the degree of D. D. S., and shall be of good moral character and habits.

Acting Dental Surgeons are employed under a three years' contract at the rate of \$150 per month. They are entitled to traveling allowances in obeying their first orders, in changing stations, and in returning to their homes at termination of service. They also have the privilege of purchasing certain supplies at the Army commissary. After three years' service, if found qualified, they are promoted to the grade of dental surgeon with the rank of first lieutenant, and receive thereafter the pay and allowances appertaining to that rank.

In order to perfect all necessary arrangements for examination, applications must be in the possession of the Surgeon General at least two weeks before the date of examination. Early attention is therefore enjoined upon all intending applicants. There is at present a large number of vacancies to be filled.

THE PANAMA-PACIFIC DENTAL CONGRESS.

As one of the attractions of the Panama Pacific International Exposition, a Dental Congress, international in character, to be known as the Panama Pacific Dental Congress, is to be held in San Francisco, California, beginning on the last Monday in August, 1915, and continuing for ten days.

A Committee of Organization has been perfected, including representatives from the Pacific Coast States—California, Oregon, Washington, Utah, Idaho, Colorado and Arizona.

This committee is now actively engaged in perfecting the work of organization, including the establishment in every State of the United States and every foreign country, where dental organizations are known to exist, of Executive Committees, which will be empowered to promote the business of the Congress by bringing it to the attention of their National, State and Local Societies, and securing memberships and contributions to the program.

The American Society of Orthodontists and the National Dental association, of the United States of America, have already made arrangements to meet in San Francisco in 1915 as parts of the Congress, and invitations will be extended to other dental societies to take similar action.

The Panama Pacific Dental Congress is the first organization to apply to the Exposition management for space for exhibits and to ask that a definite time be set aside for its meeting.

Manufacturers of dental goods have signified their intention to maintain during the Congress the greatest exhibition of dental supplies ever held; ample space for this purpose has already been promised by the Exposition authorities, and we are assured of their hearty co-operation in all things pertaining to the "Pacific Dental Congress Commission of 1915."

Over \$8000.00 has already been subscribed for promotion purposes by the dentists and dental societies of the Pacific Coast States, and this fund will be increased by many thousands of dollars before the Congress meets.

Ample funds for the promotion of the Congress are assured, and in due time Committees on Local Arrangements, Transportation, Exhibits, Clinics, Program, etc., will be appointed, and everything possible will be done to ensure the success of the Congress and make it in attendance and scientific and professional interest the greatest dental congress ever held.

The whole world is coming to San Francisco in 1915 to participate in and enjoy the Panama Pacific International Exposition, which will commemorate the completion of the world's engineering masterpiece, the Panama Canal.

Never in the history of the profession has there been so auspicious a time for holding a great dental congress, and the Panama Pacific International Exposition Company and the Committee of Organization of the Panama Pacific Dental Congress unite in a cordial invitation to the members of the dental profession to come to San Francisco in 1915 to attend the Congress and view the wonders of the Exposition and Pacific Coast of the United States of America.

INTERNATIONAL MILLER PRIZE.

First International Miller Prize, awarded to Dr. G. V. Black of Chicago. Presentation by Dr. Florestan Aguilar of Madrid. The Miller Prize was established by international subscriptions, collected by the International Dental



Reproduction of Gold Medal (Actual Diameter, Three Inches).

Federation, to commemorate the scientific work of Dr. W. D. Miller of Berlin. (The Miller Prize in 1912 was awarded to our distinguished French confrere, Dr. Charles Godon of Paris.)

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, MARCH, 1913.

No. 3

MODERN METHODS OF LOCAL ANESTHESIA.*

BY HERMANN PRINZ, A. M., M. D., D. D. S.

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Dental School, St. Louis, Mo.

History: The elimination of pain during surgical operations is inseparably interwoven with the history of the human race. It has always been the aim of those interested in the cure of bodily ills to relieve pain in some empirical manner. The efforts to solve the riddle of painless operations were, however, seemingly so very futile that even as late as 1832 Velpeau was led to express his pessimism as follows: "To escape pain in surgical operations is a chimera, which we are not permitted to look for in our time." Little did he expect that he stood at the very threshold of the discovery of anesthesia and that less than a decade later the "nirvana" of painless operations would be an accomplished fact. And when Dieffenbach, in 1847, wrote these classical words regarding the use of ether as an anesthetic, "the beautiful dream, to eliminate pain, has become a fact—pain, the highest consciousness of our earthly existence, its clearest conception of the imperfections of our body, it has to bow low before the powers of the human mind," the world at large awakened to the fact that pain had been conquered.

The discovery of anesthesia is essentially to be credited to the dental and medical profession of the United States, and the names of Crawford W. Long, Horace Wells, William P. G. Morton and Charles F. Jackson are inseparably connected with it. "If America has contributed nothing more to the stock of human happi-

*Read before the Wisconsin State Dental Society July 1, 1912.
(This paper was also read before the Minnesota State Dental Association, June, 1912.)

ness than anesthetics, the world would owe her an everlasting debt of gratitude," said the late Samuel D. Gross, the eminent surgeon, who had ample opportunity to observe in his own operating room the most remarkable changes that followed the introduction of anesthetics.

From an historical viewpoint, comparatively few important methods for the purpose of locally obtunding pain are to be recorded prior to the introduction of cocain. The compression of nerve trunks for the abolition of pain seems to be of an old and unknown origin, which was revived by Guy du Chauliac and Ambroise Paré, and finally found a permanent place in surgery as the Esmarch elastic bandage. Physically reducing the temperature of a part of the body by the application of cold was instituted much later. Bartholin and Severino introduced this method in the middle of the sixteenth century. It became a lost art, however, until John Hunter, of London, again called attention to its benefits by demonstrating it upon animals, and Larray, the chief surgeon of Napoleon's army, employed it for amputating purposes (1807). James Arnott, in 1849, utilized a freezing mixture, consisting of ice and salt, as a means of producing local anesthesia. Through the efforts of Sir B. W. Richardson, in 1866, it was placed on a rational basis by the introduction of the ether spray. The various narcotics which were employed for internal purposes were also made use of as local applications. Mandragora, henbane, aconite, the juice of the poppy head, and many other analgesic drugs enjoyed a world-wide reputation. There is probably no other medicinal plant around which clusters more mysterious and quaint associations than Mandragora. It should be remembered, however, that mandrake, or mandragora (*atropa mandragora*), must not be confounded with American mandrake, or May apple (*podophyllum peltatum*), to which it bears no relation.

The empirical search for new methods and means pressed the mysticism of the electric current into service, opening a prolific field to the charlatan, which even to this day has not lost its charm. Richardson's voltaic narcotism for a time attracted the attention of the medical and dental profession. Its inventor claimed "that by the action of a galvanic current, passing through a narcotic solution, held in contact with the part to be operated upon, some of the narcotic substance passed much more rapidly into the tissues

and that in many instances complete local anesthesia was in this way produced by solutions which are entirely inert when applied, even to the most delicate tissue, without the galvanic current." This very same principle, discovered by Reuss in 1807, and introduced by him as "electric endosmosis," or as "cataphoresis," by E. du Bois-Raymond, was "newly discovered" and reintroduced into dentistry about a decade ago. In cyclonic fashion it swept over the globe, but today it is almost forgotten. Electric or galvanic anesthesia was suggested as far back as 1851 by Dr. A. Hill, of Connecticut. Francis, in 1858, recommended the attachment of the electric current to the well-insulated handles of the forceps for the painless extraction of the teeth, and, as dental depots still offer appliances of this nature for sale, it seems that this method is still in vogue with some operators. According to Regner and Didsbury, as cited by Sauvez, a current of electricity of high frequency, when directed toward the long axis of a tooth for a shorter or longer period previous to its extraction produces insensibility to pain. In 1880 Bonwill suggested his method of "rapid breathing as a pain obtunder," which he claimed "produces a similar effect to that of ether, chloroform and nitrous oxid gas in their primary stages." In the early days of modern dentistry many feeble efforts were made to alleviate pain during trying operations. Chloroform, alcohol, ether, aconite, opium, the essential oils, and many other drugs were the usual means that were employed, either separately or as compounds, usually under fanciful names, for such purposes. Snape's calorific fluid, composed of chloroform, tincture of lemon balm, and oil of cloves; nabolis, consisting of a glycerid of tannic acid and a small quantity of chloral hydrate; Morton's letheon, which was sulphuric ether mixed with aromatic oils, are examples of proprietary preparations which enjoyed quite a reputation in their time. In 1853 Alexander Wood introduced a method of general medication by means of hypodermic injections, and a few years later the French surgeon Pravaz modified the old style syringe for this special purpose, which since is known as the "Pracaz" or hypodermic syringe. At once it was suggested to apply such drugs as morphine or tincture of opium for the purpose of producing local anesthesia. The results were not encouraging, however, until cocain was advocated. Cocain was discovered by Niemann in 1859, but it required twenty-five years to make known the re-

markable anesthetic properties which this alkaloid possesses when applied in the ready soluble form of its hydrochloric salt. It was on September 15th, 1884, that Carl Koller, of Vienna, presented this epoch-making communication at the Ophthalmologic Congress at Heidelberg, in which he demonstrated the effects of cocain as a local anesthetic. With the introduction of this drug into therapeutics, local anesthesia achieved results which were beyond expectations, and its final adoption created a new era in local anesthesia.

Means of producing local anesthesia. The term anesthesia (without sensation), which was suggested in 1846 by the great physician-litterateur, Oliver Wendell Holmes, to Dr. Morton, is usually defined as an artificial deprivation of all sense of sensation, while the mere absence of pain is referred to as analgesia. Correctly speaking, the term local anesthesia is partially a misnomer. In producing local anesthesia we do not fully comply with all the requirements that anesthesia demands, because a part of the sensorium—the sense of touch, for instance—is not abolished. The term local anesthesia, has, however, acquired such universal recognition that it would seem unwise to recommend a change.

Anesthesia may be artificially produced by inhibiting the sensory nerve fibres at their central end-organs in the brain or at their peripheral endorgans in the tissues, thus producing general and local anesthesia. Local anesthesia may be obtained in two definite ways. We may inhibit the function of the peripheral nerves in a circumscribed area of tissue, and we refer to this process as "terminal anesthesia," while, if we block the conductivity of a sensory nerve trunk somewhere between the brain and the periphery, we speak of it as "conductive anesthesia." Conductive anesthesia may be produced by injecting into the nerve trunk proper—endoneural injection—or by injecting into the tissues surrounding a nerve trunk—perineural injection. The latter form is the usual method pursued when conductive anesthesia for dental purposes is indicated. Specific forms of local anesthesia may also be produced by paralyzing the sensory ganglia in the brain or in the spinal cord; these methods have, however, no bearing on the subject under consideration.

The successful practice of local anesthesia involves the carefully adjusted co-operation of a number of important details, each one constituting a definite factor in itself, which, when neglected, must

necessarily result in failure. As a whole, the practice of local anesthesia by the hypodermic method represents the composite of the following factors:

1. A solution of active ingredients corresponding to the physical and physiologic laws which govern certain functions of the living cell.
2. A carefully selected hypodermic armamentarium.
3. A complete mastery of the technique.
4. A proper selection of the correct method suitable for the case on hand.
5. Good judgment of prevailing conditions.

Physiologic action of anesthetics. According to more recent therapeutic conceptions, it is generally recognized that a drug or combination of drugs which simultaneously produce local anemia and inhibition of the sensory nerves in a circumscribed area of tissue is the logical solution of the question of local anesthesia. Certain important factors, however, relative to the physiologic and physical action of the solution employed for hypodermic injection upon the cell govern the successful application of such methods. It is of prime importance, therefore, to comply with the laws regulating the absorption of injected solutions—osmotic pressure.

If we separate two solutions of salt of different concentration by a permeable animal membrane, a continuous current of salt and water results, which ceases only after equalization of the density of the two liquids—that is, until equal osmotic pressure (according to the Boyle-Van't Hoff law) is established. The current passes in both directions, drawing salt from the stronger to the weaker solution, and water vice versa, until osmotic equilibrium is obtained. The resultant solutions are termed, according to De Vries, isotonic.

Osmotic pressure is a physical phenomenon possessed by water and all aqueous solutions, and is dependent on the number of molecules of salt present in the solution and on their power of dissociation. In organized nature these osmotic interchanges play an important role in regulating the tissue fluids of both animal and plants. In the animal tissue the circulation depends principally upon the mechanical force exerted by the heart. The life of the cell depends on the continuous passage of these fluids, which furnish the nutrient materials, consisting of water, salt and albumin. These chemicals are normally present in certain definite proportions. The

membrane of the living cell is, however, only semi-permeable—that is, the cell readily absorbs distilled water when surrounded by it. The cell becomes macerated, loses its normal structure, and finally dies. If on the other hand, the surrounding fluid be a highly concentrated salt solution, the solution absorbs water from the cell, no salt molecules enter into the cell body proper. The cell shrinks, and finally dies. This process of cell death is, in general pathology, referred to as *necrobiosis*. Another important factor teaches that all aqueous solutions that are isotonic possess the same freezing point—that is, all solutions possessing an equal freezing point are equi-molecular, and possess equal osmotic pressure. This law of physical chemistry has materially simplified the preparation of such solutions. The freezing point of human blood, lymph, serum, etc., has been found to equal approximately 0.55 degrees C., which in turn corresponds to a 0.9 per cent sodium chlorid solution. Such a solution is termed a physiologic salt solution. In the older works on physiology a 0.6 per cent sodium chlorid solution is referred to as a physiologic salt solution, and corresponds to the density of the blood of the frog. A slight deviation above and below the normal percentage of the solid constituents is permissible. When physiologic salt solution at body temperature is injected into the loose connective tissues under the skin in moderate quantities, neither swelling nor shrinking of the cell occurs. A simple wheal is formed, which soon disappears, and, as no irritation results, consequently no appreciable pain is felt. Other similar bodies that are equally soluble in water act in the same manner, with the exception of the salts of the alkali and alkaline earth metals—as potassium or sodium bromid. The latter substances produce intense physical irritation, followed, however, by prolonged anesthesia, and in consequence are termed by Liebreich painful anesthetics. If, on the other hand, simple distilled water is injected, only a superficial anesthesia is produced; the injection itself is very painful, and acts as a direct protoplasm poison by maceration of the cell contents, which results in the death of the cell. If distilled water approximately at a ratio of ten drams to the pound of body weight is injected into dogs, they will succumb in a short time. The injection of higher concentrated salt solutions produces opposite effects; water is removed from the tissues with more or less pronounced pain, and followed by superficial anesthesia. The red blood corpuscles are extremely

susceptible to any injected fluid which is not isotonic in its nature. They are universally destroyed (hemolysis) by the injection of fluids which are not represented by an isotonic salt solution. Severe tissue disturbances result, which may terminate in necrosis. Hypotonic solutions—solutions containing less than 0.9 per cent of sodium chlorid—cause swelling of the tissue, while hypertonic solutions—solutions containing more than 0.9 per cent of sodium chlorid—produce shrinkage. These manifestations are proportionately the more intense the further the solution is removed from the freezing point of the blood. Furthermore, hypotonic as well as hypertonic solutions require much more time for their absorption than isotonic solutions, as the osmotic pressure has to be standardized to the surrounding fluids—that is, to the isotonic index of the tissue fluids. Local anemia, or ischemia—a temporary constriction of circulation—prevents, as it has been experimentally shown, the rapid absorption of fluids that are injected into the affected area. Retarded absorption of the injected fluid, holding poisonous drugs in solution, means increased action of these poisonous drugs within the injected area. Increased action denotes increased consumption of the poisoned drugs, and, as a consequence, there is less danger from general absorption. The more important means applied for the purpose of producing local anemia are:

1. The Esmarch elastic bandage.
2. The application of cold.
3. The extract of the suprarenal capsule, or its synthetic substitutes.

Some observers have maintained that local anemia produces anesthesia. This is not, however, the case, as it is merely an important means to confine the injected anesthetic to the anemic region, and thus bring about an increased and prolonged action of the drug. Consequently the concentration of the anesthetic solution may be of a lower percentage, which, of course, lessens the danger of intoxication. For plausible reasons the Esmarch elastic bandage cannot be made use of for dental operations.

Physically reducing the temperature of the body by the application of cold (ice pack, ice and salt mixture, cold metals, etc.) was practiced by the older surgeons. James Arnott, in 1848, suggested the adoption of diminished temperature as "a safer mode than any hitherto in use of producing insensibility in surgical

operations," and Blundell, in 1855, advocated ice packs and salt solutions as means of producing "local anesthesia by congelation" for dental purposes. Through the efforts of Sir B. W. Richardson, in 1866, this method was placed on a rational basis by the introduction of his ether spray. To obtain good results, a pure ether (boiling point 95° C.), free from water, is necessary. Certain other hydrocarbons possess similar properties in varying degrees, depending on their individual boiling point. In 1867, Rottenstein called attention to the use of ethyl chlorid as a refrigerating agent, and Rhein, in 1889, introduced methyl chlorid for the same purpose. In 1891 Redard reintroduced ethyl chlorid as a local anesthetic, which since has become known by many trade names as antidolorine, kelene, narcotile, etc.—and mixtures of the first two in various proportions, known as anestol, anesthetic, coryl, methethyl, etc., are extensively used in minor oral and general surgery. A pure ethyl chlorid (boiling point 55° F., 13° C.) is best suited for this purpose, as it lowers the temperature of the tissues sufficiently to produce a short superficial anesthesia in a few minutes. Too rapid cooling or prolonged freezing by methyl chlorid (boiling point— 12° F.— 24° C.), or the various mixtures thereof, produce deeper anesthesia, but such procedures are dangerous. They frequently cut off circulation in the affected parts so completely as to produce sloughing (necrosis). Liquid nitrous oxid gas, liquid or solid carbonic acid (recently known as carbonic acid snow), and liquid air, all of which have a boiling point far below zero, are recommended for similar purposes, but they require cumbersome apparatus and are extremely dangerous.

Ethyl Chlorid and its administration. Ethyl chlorid—Monochlorethane; hydrochloric ether, C_2H_5Cl . "A haloid derivative, prepared by the action of hydrochloric acid gas on absolute alcohol." At normal temperature, ethyl chlorid is a gas, and under a pressure of two atmospheres it condenses to a colorless, mobile, very volatile liquid, having a characteristic, rather agreeable, odor and burning taste. It boils at about 55° F. (13° C.) and is very inflammable, burning with a smoky, green-edged flame. It is stored in sealed glass or metal tubes, and when liberated at ordinary room temperature (70° F., 21° C.) it evaporates at once. In commerce it is supplied in plain or graduated glass tubes of from 3 to 60 grams capacity, or stored in metallic cylinders holding from 60 to 100 grams

or more. To remove the ethyl chlorid from the hermetically sealed smaller tubes, the neck has to be broken off, while the larger glass and metallic tubes are provided with suitable stoppers of various designs to allow definite amounts of the liquid to be released.

Mode of application. For the extraction of teeth, immediate removal of the pulp, opening of abscesses, and other minor operations about the oral cavity, the tube should be warmed to body temperature, by placing it in heated water, and its capillary end should be held about six to ten inches from the field of operations. The distance depends on the size of the orifice of the nozzle, and complete vaporization should always be produced. The Gebauer tube is fitted with a spray nozzle, which shortens the distance to one or two inches, and is especially well adapted for dental purposes. The stream is directed upon the tissues until the latter are covered with ice crystals and have turned white. For the extraction of teeth the liquid should be projected directly upon the surface of the gum as near the apex of the root as possible, but care should be taken to protect the crown of the tooth on account of the painful action of cold on this part. Tissues to be anesthetized should first be dried and well surrounded by a film of vaselin or glycerin, and protected by cotton rolls and napkins, to prevent the liquid from running into the throat. Let the patient breathe through the nose. Occasionally light forms of general anesthesia are induced by inhaling the vapor. On account of the difficulty of directing the stream of ethyl chloride upon the tissues in the posterior part of the mouth, it is not successfully applied in those regions. The intense pain produced by the extreme cold prohibits its use in pulpitis and acute pericementitis. To anesthetize the second and third branch of the fifth nerve, it is recommended to direct the stream of ethyl chloride upon the cheek in front of the tragus of the ear, but the author has not seen good results from such a procedure. Caution should be exercised in using ethyl chlorid near an open flame or in conjunction with the thermocautery, as severe burns have resulted by setting the inflammable vapor on fire.

Within the last decade the active principle of the suprarenal capsule has evoked extensive comments in therapeutic literature. It has been isolated by a number of investigators under different names, as epinephrin by Abel (1897), suprarenin by Feurth (1898), and adrenalin by Takamine and Aldrich (1901). Many other titles

are given to this chemical—as adnephrim, adrin, paranephrin, suprarenalin, supracapsulin, hemostasin, etc. The United States Pharmacopoeia (eighth revision) has not as yet admitted this alkaloid to its pages, and, therefore, whenever we refer here to the hydrochloric salt of the alkaloid of the suprarenal capsule, we speak of it as adrenalin, the term which is at present preferred in the United States. Adrenalin is a grayish-white powder, slightly alkaline in reaction, and perfectly stable in dry form. It is sparingly soluble in cold and more soluble in hot water, is insoluble in ether or alcohol, and with acids it readily forms soluble salts. The preparation that is employed mostly for therapeutic purposes is a solution of adrenalin hydrochlorid in a 1 to 1000 physiologic salt solution, to which preservatives—as small quantities of chloretone, thymol, etc.,—are added. Adrenalin solution does not keep well. On exposure to air, and especially in the presence of even minute quantities of an alkali, it is easily oxidized, becoming pink, then red, and, finally, brown, and with this change of color its physiologic property is destroyed. If the adrenalin solution be further diluted, it becomes practically worthless within a few days.

When adrenalin is injected into the tissues, even in extremely small doses, it temporarily raises the arterial blood pressure, acting as a powerful vasoconstrictor by stimulating the smooth muscular coat of the blood vessels, and thus produces local anemia. Large doses finally reduce the blood pressure, and heart failure results. The respiration at first quickly increases, but slows down and, finally, stops with expiration. Its action is largely confined to the smooth muscle fibers of the peripheral vessels. Adrenalin is destroyed by the living tissue cells, the body ridding itself of the poison in some unknown manner. While adrenalin does not possess local anesthetic action, it increases very markedly the effect of certain anesthetics when combined with them. Very recently it has been shown by Esch that adrenalin possesses a specific action on nerve tissue, viz.: it prepares the latter tissue in a peculiar way, so as to take up the anesthetic more readily. Esch compares this action with the use of a mordant in the dyeing industry, viz.: to “fix” the color. These observations are of vast importance, in connection with the production of local anesthesia. Carpenter, Peters, Moller, and others referred to the use of adrenalin in this respect, and, finally, Braun, in 1902, published his classic researches, and to

him and his co-workers, especially Heinze and Lawen, belong the credit of establishing a rational basis for the production of local anesthesia. It is claimed that secondary hemorrhage frequently occurs after the anemia produced by the adrenalin has subsided, and that tissue themselves suffer from the poisoning effect of the drugs, resulting in necrosis. Such results are produced only by the injection of too large quantities of the drug, which by their deeper action close up the blood vessels, and, if the tissues are too long deprived of the circulation, we are able to understand why sloughing may result. Small doses of adrenalin have no effect upon the tissues or on the healing of a wound. Palpitation of the heart and muscular tremor, which were occasionally noticed in the early period of the use of the drug, are the direct result of too large doses. Recently a synthetic adrenalin has been successfully prepared by Stolz, which, with hydrochloric acid, forms a stable and readily soluble salt. It is known as synthetic suprarenin hydrochlorid. The new chemical has been carefully tested physiologically and in clinical work, and the general consensus of opinion points to the fact that it is not alone equal, but in certain respects superior, to the organo-preparations. Synthetic suprarenin solutions may be readily sterilized by boiling. They are relatively stable, and their chemic purity insures uniform results. They are comparatively free from dangerous side actions. The writer's observations regarding the value of synthetic suprarenin relative to its actions and its general behavior is in full accordance with the above statements, and its advantages over the organo-preparations has led us to adapt it as a component in the preparation of local anesthetic solutions. For dental purposes—that is, for injecting into the gum tissue—the dose may be limited to one drop of the adrenalin solution (1 to 1000) or the synthetic suprarenin solution (1 to 1000), added to each cubic centimeter of the anesthetic solution, 5 drops being approximately the maximum dose to be injected at one time.

Ever since the introduction of cocain into materia medica for the purpose of producing local anesthesia, quite a number of substitutes have been placed before the profession, for which superiority in one respect or another is claimed over the original cocain. The more prominent members of this group are tropacocain, the eucains, acoïn, nirvanin, alypin, stovain, novocain, and, very recently, quinin and urea hydrochlorid. None of thees compounds, with the

exception of novocain has proved satisfactory for the purpose in view. The classical researches of Braun have established certain factors which are imperative to the value of a local anesthetic. These factors concern their relationship to the tissues in regard to their toxicity, irritation, solubility and penetration, and to the toleration of adrenalin.

There is no need at this moment to enter into a discussion of the pharmacologic action of the drugs usually classified as local anesthetics. Let it suffice to state how the above mentioned drugs fulfill the demands of Braun. Tropicocain is less poisonous, but also less active than cocain, it completely destroys the action of adrenalin; the eucains partially destroy the adrenalin action, they are, comparatively speaking, equally as poisonous as cocain; acocain is irritating to the tissues and more poisonous than cocain; nirvanin possesses little anesthetic value; alypin and stovain are closely related, producing severe pain when injected, which occasionally has resulted in necrosis. Quinin and urea hydrochlorid reacts strongly acid and, as a consequence, severely damages the tissues in the injected area. As we have recently shown elsewhere it possesses no advantage when employed as a local anesthetic in dental operations but has many disadvantages as compared to cocain or novocain.

Novocain alone fully corresponds to every one of the above claims. Its toxicity is about two to six times less than cocain; it does not irritate in the slightest degree when injected, consequently no pain is felt from its injection per se; it is soluble in its own weight of water; it will combine with adrenalin in any proportion without interfering with the physiological action of the latter, and it will be readily absorbed by the mucous membrane. The studies of Biberfeld and Braun brought to light another extremely interesting factor concerning the novocain-adrenalin combination. Both experimenters, working independently of each other, observed that the adrenalin anemia on the one hand, and the novocain anesthesia on the other hand were markedly increased in their total effects upon the tissues. Consequently, a small quantity of this most happy combination is required to produce the same therapeutic effect as a large dose of each individual drug alone would produce when injected separately. The injection of a solution of the combined drugs is precisely confined to the injected area, general effects are, therefore, rarely produced.

Novocain is the hydrochloric salt of a synthetically prepared alkaloid, the methyl ester of p-aminobenzoic acid. It is a white crystalline powder, or colorless needle-shaped crystals, melting at 263° F. (156° C.). It may be heated to 200° F. (120° C.) without decomposition. It dissolves in an equal amount of cold water, the solution having a neutral character; in cold alcohol it dissolves in the proportion of 1 to 30. Caustic alkalies and alkaline carbonates precipitate the free base from the aqueous solution in the form of a colorless oil, which soon solidifies. It is incompatible with the alkalies and alkaline carbonates, with picric acid, and the iodides. Its solutions may be sterilized by boiling without decomposition.

As stated above, the relative toxicity of a given quantity of cocain in solution depends upon its concentration, this same peculiarity is not shared by novocain. The dose of novocain may be safely fixed at one-third of a grain for a single injection. For dental purposes a one and one-half or a two per cent solution in combination with adrenalin has been injected without any ill results. For the purpose of confining the injected novocain to a given area, the addition of adrenalin in small doses, on account of its powerful vasoconstrictor action, is well adapted. It is the important factor which prevents the ready absorption of both drugs and consequently largely nullifies poisonous results. An injection of ten drops of a two per cent solution of novocain labially into the tissue produces a diffuse anesthesia lasting approximately twenty minutes; the same quantity, with the addition of one drop of adrenalin chlorid solution increases the anesthetic period to over one hour, and localizes the effect upon the injected area.

A suitable solution of novocain for dental purposes may be prepared as follows:

Novocain	10 grains
Sodium chlorid	4 grains
Distilled water	1 fluid ounce

Boil.

To each syringe-ful (2 c. c.) add two drops adrenalin chlorid solution when used.

A sterile solution may be made extemporaneously by dissolving the necessary amount of novocain-adrenalin in tablet form in a given quantity of boiled distilled water. A suitable tablet may be prepared as follows:

Novocain	1-3 grain
Synthetic suprarenin hydrochlorid. .	1-1200 grain
Sodium chlorid	1-3 grain

One tablet dissolved in twenty minims of sterline water makes a two per cent solution of novocain ready for immediate use.

Solutions for hypodermic purposes should preferably be made fresh when needed. A small glass dish and a dropping bottle constitute the simple outfit for such work. The dropping bottle should hold from one to two ounces. A suitable one is made by the Whitall-Tatum Co., of Philadelphia, and may be bought in the drug shops. It should be provided with a dust cap. "A groove on one side of the neck of the bottle, and a vent on the other, connected with two grooves in the back of the stopper, allow the contents to flow out drop by drop. A quarter turn of the bottle closes the bottle tightly." The water used for making the solution should be boiled and filtered, distilled water. The hypodermic solution can be made extemporaneously in a few seconds; Place a tablet in a sterile glass dish, add 20 minims (1 c. c.) of water, and to facilitate the solution, mash the tablet. The soltuion is now ready for immediate use.

The hypodermic armamentarium. A hypodermic syringe that answers all dental purposes equally well is an important factor in carrying out the correct technique of the injection. The injection into the dense gum tissue requires from 15 to 50, or even more, pounds of pressure as registered by an interposed dynamometer, while in pressure anesthesia 100 or more pounds are frequently applied.

The selection of a suitable hypodermic syringe is largely a matter of choice. All-glass syringes, glass barrel syringes, and all-metal syringes are the usual types found in the depots. After testing most of the dental hypodermic syringes offered in the dental depots within the last five years by means of the pressure gauge and in clinical work, subjecting the syringes to a routine wear and tear, the author has found that the all-metal syringes of the "imperial" types are to be preferred over other makes. They are usually made of nickel-plated brass, which, however, is a disadvantage, as the nickel readily wears off from the piston, and exposes the easily corroded brass. The Manhattan all-metal platinoid syringe gives the best general service, and we can conscientiously

recommend it to our confreres. The syringe holds 40 minims (2 c. c.), is provided with a strong finger cross-bar and is extremely simple in construction. The piston consists of a plain metal rod, without a thickened or ground piston-end or packing. The piston-rod is sufficiently long to allow about two inches of space between the cross-bar and the piston-top. This space is of importance, as it allows the last drop of the fluid to be expelled under heavy pressure without tiring the fingers. The packing consisting of leather washers inserted at the screw point, and are quickly removed and replaced if necessary.

The hypodermic syringe requires careful attention. It is not necessary to sterilize it by boiling after each use, unless it be contaminated with blood or pus. The simple repeated washings with alcohol and carefully drying is sufficient. The cap is readjusted, and the piston-rod is covered with a thin film of carbonated vaselin, or surgical lubricating jelly, and placed in position. If the syringe is boiled, all the washers must be removed. The syringe is kept in a covered glass or metal case, and a large bacteriologic Petri dish is suitable for this purpose. Leather-lined or felt-lined boxes afford breeding places for bacteria. Some operators prefer to constantly keep their syringes in an antiseptic solution when not in use, and others prefer to place them in a special sterilizing bottle, which bottles may now be purchased at dental depots.

Dental hypodermic needles should be made preferably of seamless steel, or, still better, of nickel steel, 26 to 28 B. & S. gauge, and provided with a short razor edge point. Thicker needles cause unnecessary pain, and thinner needles are liable to break. Iridio-platinum needles are preferred by some operators, as they may be readily sterilized in an open flame. The needle should measure from a quarter to half an inch. For infiltration anesthesia one-inch needles are necessary, and curved needles of various shapes are essential in reaching the posterior parts of the mouth. The "Schimmel" needles are excellent, but do not, however, fit every syringe. For pressure anesthesia special needles are required, and may be bought at the depots, or quickly prepared by grinding off the steel needle at its point of reinforcement. The sterile needle should be kept in well-protected glass containers. The needles are sterilized after each use by boiling in plain water, dried with the hot-air syringe, and immediately transferred to a covered sterile

glass dish. The sterile needles should not be again touched with the fingers, and the customary wire insertion is unnecessary.

Technique of injection. Various methods of injecting the anesthetic solution about the teeth are in vogue. For the sake of convenience we may be permitted to divide them as follows :

The periosteal injection.

The periodontal injection.

The intraosseous injection.

The perineurial injection.

The injection into the pulp.

Before starting any surgical interference in the mouth, the field of operation should be thoroughly cleansed with an antiseptic solution. A thin coat of the official tincture of iodine painted over the surface is very useful for this purpose. After the diagnosis is made the method of injection best suited for the case on hand is then decided. The necessary quantity and the concentration of the anesthetic solution is now prepared, and the syringe and hypodermic needle fitted ready for the work. To facilitate the ready penetration of the needle into the tissues, its point may be coated with carbated vaselin. The correct position of the syringe in the hands of the operator and its proper manipulation is an important factor, and has to be acquired by practice. The hand holding the syringe is exclusively governed in its movements by the wrist, so as to allow delicate and steady movements, and the fingers must be trained to a highly developed sense of touch. The syringe is filled by drawing the solution up into it; it is held perpendicularly, point up, and the piston is pushed until the first drop appears at the needle point, which precaution prevents the injection of air into the tissues.

The periosteal injection. The periosteal injection about the root of an anterior tooth is best started by inserting the needle midway between the gingival margin and the approximate location of the apex. The pain of the first puncture may be obviated by a fine, very sharp pointed needle, the simple compression of the gum tissue with the finger tip, by holding a pledget of cotton saturated with the prepared anesthetic solution on the gum tissue for a few moments, or by applying a very small drop of liquid phenol on the point of puncture. The needle opening faces the bone, the syringe is held in the right hand, at an acute angle with the long axis of the tooth, while the left hand holds the lip and cheek out of the way.

After puncturing the mucosa, a drop of the liquid is at once deposited in the tissue, and the further injection is painless. Slowly and steadily the needle is forced through the gum tissue and periosteum along the alveolar bone toward the apex of the tooth, depositing the liquid under pressure close to the bone on its upward and return trip. The continuous slow moving of the needle prevents injecting into a vein. A second injection may be made by partially withdrawing the needle from the puncture and swinging the syringe anteriorly or posteriorly, as the case may be, from the first route of the injection. This latter method is especially indicated in injecting the upper molars. After removing the needle, place the finger tip over the puncture and slightly massage the injected area. A circular elevation outlines the injected field. The naturally pink color of the gum will shortly change to a quite anemic hue, indicating the physiological action of the adrenalin on the circulation. No wheal should be raised by the fluid, as that would indicate superficial infiltration and consequently failure of the anesthetic.

As the liquid requires a definite length of time to pass through the bone lamina and to reach the nerves of the peridental membrane and the pulp, from five to ten minutes should be allowed before the extraction is started. The length of time depends on the density of the surrounding structure of the tooth. The progress of the anesthesia may be tested with a fine pointed probe, and its completeness indicates the time when the extraction should be started.

The upper eight anterior teeth usually require a labial injection only, while the molars require both a buccal and a palatine injection, using a slightly curved needle for this purpose. Buccally the injection is made midway between the mesial and distal root, and on the palatine side over the palatine root.

The lower eight anterior teeth are comparatively easily reached by the injection. The straight needle is inserted near the apex of the tooth, the syringe is held in a more horizontal position and the injection proceeds now as outlined above.

The lower molars require a buccal and lingual injection. The curved needle is inserted midway between the roots, the gum margin, and the apices. The external and internal oblique lines materially hinder the ready penetration of the injected fluid, and therefore ample time should be allowed for its absorption.

If two or more adjacent teeth are to be removed, the injection by means of infiltrating the area of the gum fold directly over the apices of the teeth is to be preferred. It is advisable to use a one-inch needle for this purpose, holding the syringe in a horizontal position, so as to reach a larger field with a single injection.

The injection into inflamed tissue, into an abscess, and into phlegmonous infiltration about the teeth is to be avoided. The injection into engorged tissue is very painful; the dilated vessels quickly absorb cocain without producing a complete anesthesia, and generally poisoning may be the result. In purulent conditions the injection is decidedly dangerous, as it forces the injection beyond the line of demarcation. If the abscess presents a definite outline, the injection has to be made into the sound-tissue surrounding the focus of infiltration. If a tooth is affected with acute diffuse or purulent pericementitis, a distal and a mesial injection usually produce successful anesthesia by blocking the sensory nerve fibers in all directions.

Peridental anesthesia. The teeth or roots standing singly, or teeth affected by pyorrhea or similar chronic peridental disturbances, are frequently quickly and satisfactorily anesthetized by injecting the fluid directly into the peridental membrane. This method is known as peridental anesthesia, and its technique is very simple. In single-rooted teeth a fine and short hypodermic needle is inserted under the free margin of the gum or through the interdental papilla, into the peridental membrane between the tooth and the alveolar wall. Sometimes the needle may be forced through the thin alveolar bone so as to reach the peridental membrane direct. To gain access to this membrane in teeth set close together, separation is essential. It may be accomplished with an orange wood stick or by any of the various mechanical separators. By so doing, the body of the tooth is shifted to one side and thereby creating a slight space between it and the alveolar process. The injection is now made directly into the exposed peridental membrane. By reversing the separator, the tooth is shifted to the opposite side and the injected liquid is forced toward the apex of the tooth. A second injection is now made in this freshly exposed portion of the peridental membrane. Two, sometimes three, injections are necessary. To force the liquid into the membrane usually requires a higher pressure than that which is necessary for injecting into the perios-

teum covering the alveolar process, but the quantity of the anesthetic fluid is less than that which is required for the former injection. Acute inflammatory conditions of the peridental membrane and its sequelae prohibit the use of this method. Peridental anesthesia is the purest form of local anesthesia, since the seat of the nerve supply of the tooth is very quickly reached, and as a consequence the results obtained are in the majority of cases extremely satisfactory, provided that general conditions justify its application. The method is especially serviceable for the removal of pulps in all such cases where contact anesthesia is not indicated or for temporary desensitizing a tooth for operative procedures.

Intraosseous injection. To facilitate the passage of the injected fluid into the bone structure proper, Otté, in 1896, recommended a method by which he forces the anesthetic solution directly into the spongy cancelloid bone. Otté terms this procedure the intraosseous method of injection, and its technique is described by him as follows: After the gum tissue is thoroughly cleansed with an antiseptic solution, it is anesthetized about the neck of the tooth in the usual manner. After waiting two or three minutes, an opening is made into the gum tissue and the bone on the buccal side with a fine spear drill or a Gates-Glidden drill. The opening should be made more or less at a right angle with the long axis of the tooth, a little below the apical foramen in single-rooted teeth or between the bifurcation in the molars. The right-angle hand piece is preferably employed for this purpose. The drill should be of the same diameter as the hypodermic needle. The gum fold is tightly stretched to avoid laceration from the rapidly revolving drill. As soon as the alveolar process is penetrated, a peculiar sensation conveyed to the guiding hand indicates that the alveolus proper is reached, and the sensation felt by the hand is about the same as that experienced when a burr enters into the pulp chamber. In this artificial canal the close fitting curved needle of the hypodermic syringe is now inserted, and the injection is made in the ordinary way. The quantity of fluid used is much less than is usually needed for a subperiosteal injection. The roots of the teeth are imbedded in a sieve-like mass of bone tissue (diploe), which allows a ready penetration of fluid when injected under pressure. Very recently, Masselink advocates this method of the anesthetization of any tooth in the mouth either for the purpose of ex-

tracting or the removal of its pulp. He employs a No. $\frac{1}{2}$ round burr for penetrating the alveolar plate and a very short needle (about $\frac{1}{16}$ of an inch) with a dull point for the injection.

Perineurial injection. For the anesthetization of a number of teeth in the upper or the lower jaw, conductive anesthesia by means of perineurial injection is preferably employed. The perineurial injection is made near the point of exit or entrance of the various nerves about their respective foramina. To anesthetize all the teeth of one-half of the upper jaw four injections are necessary, i. e., two buccally and two on the palatine side of the bone. A one-inch needle is required for such work. To reach the many small branches of the posterior dental nerves at the alveolar foramina the injection is made buccally over the region of the tuberosity about $\frac{1}{2}$ inch above the gingival line between the first and second molar tooth. The second injection is made below the infraorbital foramen, so as to reach the middle and anterior dental nerves. With the index finger of the left hand the foramen is approximately located by exerting pressure upon the nerve-exit. The lip is lifted up with the middle finger of the same hand and the needle is now inserted between the apices of the cuspid and first bicuspid teeth. The needle is slowly pushed forward until its point is felt beneath the finger tip. To reach the nerve supply of the hard palate one injection is made near the posterior palatine canal, and the other near the foramina of Scarpa. The great palatine nerves pass through the posterior palatine canals on either side of the hard palate. The canals lie about three-eighths of an inch above the edge of the alveolar process and the last molar tooth. They move posteriorly with the eruption of the successive teeth. The naso-palatine nerves pass through the foramina of Scarpa (incisive foramen) which are situated in the line of the suture of the maxillary bones. If an imaginary line is drawn from the distal borders of the two cuspids and passing over the hard palate, the line will ordinarily pass through the foramina. The needle should be inserted directly back of the papilla, which lies posteriorly between the central incisor teeth.

To anesthetize one-half of the mandible, three injections for the deposition of the anesthetic solution are necessary. The first injection is applied near the mandibular foramina, the second near the mental foramen, and the third into the incisive fossa. To

1. A solution of active ingredients corresponding to the physical locate the mandibular foramen in the mouth, the lingual surface of the ramus is palpated with the finger, the anterior sharp border of the coronoid process is easily felt about five-eighths of an inch posterior of the third molar. The process passes downward and backward of the third molar, and enters into the external oblique line. Mesially from this ridge is to be found a small triangular concave plateau, which is facing downward and outward, being bound mesially by a distinct bony ridge and covered with mucous membrane. As there is no anatomical name attached to this space, Braun has called it the retromolar triangle (*trigonum retromolare*). In the closed mouth it is located at the side of the upper third molar, and in the open mouth it is found midway between the upper and lower teeth. Immediately in back of the mesial border of this triangle, directly beneath the mucous membrane, lies the lingual nerve, and about three-eighths of an inch farther back the mandibular nerve is to be found. This last nerve lies close to the bone, and enters into the mandibular foramen, which is partly covered by the mandibular spine.

Before starting the injection the patient should be cautioned to rest his head quietly on the headrest of the chair, as any sudden movement or interference with the hand of the operator may be the cause of breaking the needle in the tissue. The syringe, provided with a one-inch needle, is held in a horizontal position, resting on the occluding surfaces of the teeth from the cuspid backward and slightly toward the median line. The needle is to be inserted three-eighths of an inch above and the same distance back of the occluding surface of the third lower molar, the needle opening facing the bone. This position will insure the correct direction of the needle point so as to reach the tissues immediately surrounding the nerves, and not lose the injection in the adjacent thick muscle tissue. The needle must always be in close touch with the bone, and is now slowly pushed forward, depositing a few drops of fluid on its way until the ridge is reached. About five drops of fluid are injected in this immediate neighborhood for the purpose of anesthetizing the lingual nerve. The needle is pushed very slowly forward, always keeping in close touch with the bone and depositing fluid on its way, until it is pushed in about five-eighths of an inch. It is important carefully to feel the way along the bony wall of the ramus

as the needle may have to pass over the roughened and bony elevations, which afford attachment to the internal pterygoid muscle. During the injection the syringe should remain in the same horizontal position as heretofore outlined. Soon after the injection, paresthesia of one-half of the tongue on the side of the injection occurs, which is soon followed by anesthesia of the mandibular nerve. Paresthesia of the mucous membrane and half of the lower lip is also established. The pulps of the lower teeth, including the cuspid and lateral incisor and the gum tissue on both sides of the jaw, are anesthetized, including a part of the anterior floor of the mouth. The complete anesthesia of the two nerves also anesthetizes the whole alveolar process in this region. About five minutes are required for the complete anesthetization of the lingual nerve, and at least fifteen minutes for the mandibular nerve. Braun claims that the injection is absolutely free from danger, while Romer states that danger may arise if the whole quantity of the solution should accidentally be injected into a vein.

The mental foramen lies midway between the superior and inferior border of the body of the mandible on its external surface, usually below the second bicuspid teeth. Its opening always faces posteriorly. An injection near this point increases the anesthesia in the bicuspid region. The incisive fossa is a shallow depression on the external surface of the mandible between the cuspid teeth. It may be located by the palpating finger immediately above the chin. A number of small foramina are found in this region for the passage of nerves and nutrient vessels. The lower incisors may be anesthetized by making injections anteriorly into the incisive fossa and one posteriorly in the region corresponding to the fossa. Usually, peridental anesthesia is to be preferred for these teeth.

Conductive anesthesia is serviceable if a number of teeth have to be removed at one visit. It should be borne in mind, however, that in average only one-half of either jaw should be anesthetized at one sitting so as to keep the quantity of the injected anesthetic solution within the limits of ordinary dosage.

The injection into the pulp. By pressure anesthesia, pressure cataphoresis, or contact anesthesia, as the process is variously termed, we understand the introduction of a local anesthetizing agent in solution by mechanical means through the dentin into the pulp for the purpose of rendering this latter organ insensible to pain.

Simple hand pressure with a suitable instrument, the hypodermic syringe or the so-called high pressure syringe, is recommended for such purposes. Regarding the principles of pressure anesthesia, it should be remembered that we cannot force a liquid through healthy dentin by a mechanical device without injury to the tooth itself. If a cocain solution is held in close contact with the protoplasmic fibers of the dentin, the absorption of cocain takes place in accordance with the law of osmosis. The inhibition of the anesthetic is enhanced by employing a physiological salt solution as a vehicle. On the other hand, living protoplasm reacts unfavorably against the ready absorption of substances by osmosis for two reasons: (1) Its albumin molecule is relatively large and not easily diffusible, and (2) as an integral part of its life it possesses "vital" resistance toward foreign bodies. These latter factors are sufficiently demonstrated by the fact that it is very difficult to stain living tissue. Dehydration of the protoplasm increase the endosmosis of the anesthetic solution markedly.

When we apply the same "pressure" anesthesia upon carious dentin, the above statements do not hold good. We are able to press fluids quite readily through carious dentin. We must bear in mind that such dentin has been largely deprived of its inorganic salts, leaving an elastic spongy matrix in position. By drying out this dentin and then confining the anesthetic solution under a suitable water-tight cover, the pressure applied by the finger is quite sufficient to obtain the results. Colored fluids may be readily pressed through such dentin and even stain the pulp.

In teeth not fully calcified and in so-called soft teeth, pressure anesthesia is more readily obtained while, according to Zederbaum, the process fails in "teeth of old persons, teeth of inveterate tobacco chewers, worn, abraded and eroded teeth, teeth with extensive secondary calcific deposits, teeth whose pulp canals are obstructed by pulp nodules, teeth with metallic oxides in tubules, teeth with leaky old fillings, badly calcified teeth—mainly all from one and the same cause, namely, clogged tubuli. In most cases no amount of persistent pressure will prove successful."

From the foregoing it will be observed that the so-called high pressure syringes possess little merit relative to pressure anesthesia. The pressure which can be produced by a good working all-metal syringe, holding it between the index and middle fingers and forcing

the piston with the thumb, amounts to 250 to 300 pounds in the average man. The pressure required in pressure anesthesia to produce a perfect contact is usually much less than the above force.

Methods of anesthetizing the pulp. 1. The pulp is wholly or partially exposed: Isolate the tooth with the rubber dam and clean it with water and alcohol. Excavate the cavity as much as possible and if the pulp is not exposed, dehydrate with alcohol and hot air. Saturate a pledget of cotton or a piece of spunk with a concentrated cocain or novocain solution, place it into the prepared cavity and cover it with a piece of vulcanizable rubber and with a suitable bur-nisher apply slowly, increasing continuous pressure from one to three minutes. The pulp may now be exposed and tested. If it is still sensitive, repeat the process. Loeffler states that "this pressure may be applied by taking a short piece of orange wood, fit it into the cavity as prepared, and direct the patient to bite down upon this with increasing force. In this way we can obtain a well-directed regulated force or pressure, and with less discomfort to the patient and operator." Miller described this process as follows: "After excavating the cavity as far as convenient and smoothing the borders of it, take an impression in modeling compound, endeavoring to get the margins of the cavity fairly well brought out; put a few threads of cotton into the cavity and saturate them thoroughly with a 5 to 10 per cent solution of cocain, cover this with a small bit of rubber dam, and then press the compound impression down upon it. We obtain thereby a perfect closure of the margin, so that the liquid cannot escape and one can then exert pressure with the thumb sufficient to press the solution into the dentin.

2. The pulp is covered with a thick layer of healthy dentin. With a very small spade drill bore through the enamel or direct into the dentin at a most convenient place, guiding the drill in the direction of the pulp chamber. Blow out the chips, dehydrate with alcohol and hot air, and apply the syringe provided with a special needle, making as nearly as possible a water-tight point. Apply slow, continuous pressure for two or three minutes. With a round burr the pulp should now be exposed, and if still found sensitive, the process is to be repeated.

Recently a method has come into vogue which allows successful anesthetization of the pulp by injecting the anesthetic solution around the apex of the tooth. The spongy alveolar process, which contains

lymph channels, allows the ready penetration of the fluid. The injection should be made close to the bone, pushing the needle slowly toward the apex, while the fluid is deposited drop by drop. No wheal should be raised by the injection, otherwise the benefits of the pressure from the dense gum tissue is lost.

According to Hertwig, the protoplasm of the cell primarily transfers irritation; and, secondly, transmits absorbed materials. Therefore, the anesthetic solution has to pass through the entire dentinal fiber before the nerve tissue of the pulp proper is reached. Consequently a certain period of time is required before the physiological effect of the anesthetic is manifested. This period of latency is dependent upon the thickness of the intermediate layer of dentin or bone. The successful anesthetization of the pulp depends largely upon this most important factor of allowing sufficient time for the proper migration and action of the drug.

The anesthetizing of the peridental membrane for the treatment of pyorrhea alveolaris is a comparatively simple matter if carried out according to the methods as outlined under the heading of peridental anesthesia. Sometimes a topical application of a fairly concentrated novocain-adrenalin solution (about 10 per cent) and applied to the pockets by means of cotton ropes accomplishes the desired purpose. The surgical treatment of pyorrhea is materially simplified if the tissues under consideration are relieved of sensation.

Local anesthesia for operations about the mouth, exclusive of the extraction of teeth.

In operating about the mouth for an abscess, a cystic or a solid tumor of the approximate size of a large walnut, a malposed tooth, or for any other purpose, the rhomboid infiltration according to Hackenbruch affords the simplest means of producing a most satisfactory anesthesia. After previously cleansing the field of operation with an antiseptic solution, a very small drop of phenol is placed at A and B to superficially obtund the point of puncture. The needle is quickly thrust through the mucosa at A, and at once slow pressure is exerted on the piston, moving the needle steadily along the external line of the tumor. The needle is now partially withdrawn, without, however, leaving the original puncture, and a second injection or as many as may be needed are made in opposite directions. This maneuver is now repeated at B and thus a circumscribed infiltration of the whole tumor is obtained. If the tumor, etc., is very

large, additional punctures and injections may be made as outlined in the schematic drawing. After ten to fifteen minutes' waiting the extirpation of the tumor may be begun. For injecting the soft tissues other than the gum a 1 per cent novocain—adrenalin solution—one tablet dissolved in 2 c.c. of water—is quite sufficient.

The anesthetization of the soft and hard palate is comparatively easily accomplished. The injection on the hard palate is started at the gingival edge of the alveolar periosteum on both sides of the jaw toward the median line. As the gum tissue is extremely dense, great force is required for a complete infiltration in this region, and only small quantities of the solution are required. The soft palate is easily infiltrated by inserting the curved needle posteriorly to the third molar.

Small tumors and cysts on the tongue or the floor of the mouth are best anesthetized by the rhomboid infiltration of Hackenbruch. For the complete extirpation of a ranula, the injection is made into the cyst wall near the periphery, after which the cyst is slit open and a small quantity of the anesthetic solution is injected into the inner surface of the cyst. Large cysts, tumors and major operation on the tongue require the anesthetization of both lingual nerves. In injecting and operating on the floor of the mouth, the index finger of the left hand should be placed on its external surface as a guide to the needle or the knife.

Local anesthesia is indicated in all minor and in relatively many major operations on the mucous surfaces, the skin, and the teeth. Local anesthesia is not a substitute for general anesthesia; its usefulness is materially increased by familiarizing one's self with the modern methods of its production and with a perfect mastering of the technique. The danger of poisoning has been practically eliminated by using isotonic solutions containing a relative small percentage of the anesthetic in combination with the alkaloid of the suprarenal capsule. Even if the danger of general necrosis is small under the very best conditions, the danger from local anesthesia is always less. The greater majority of all dental operations can be safely carried out under local anesthesia, provided the operator has acquired a complete working knowledge of the various components which, as a whole, constitute this important branch of dental therapeutics.

THE USE AND ABUSE OF CEMENTS IN THE DENTAL OFFICE.*

BY GEORGE C. POUNDSTONE, D. D. S., CHICAGO.

It is with reluctance that I attempt to again open that much discussed cement question, for I assure you that there are men far more able to discuss it than I, men who perhaps have live messages on the subject waiting to be delivered, men who have delved deep into this problem and have learned things that the rest of us have not even suspected, or men who have spent days and nights in careful experimentation and have minute and accurate detailed records of their work.

I have no such message for you at this time and tried to persuade your program committee that such was the case, but they insisted that I should, in view of some previous work along this line, again present a paper on cements and stipulated that it should be a along practical lines rather than a scientific discussion of the subject. I shall therefore endeavor to keep within the prescribed bounds and dwell upon the use and abuse of cements in the dental office.

What is a dental cement? To the average dentist it is a powder and a liquid to be mixed together to make a filling or set a crown or an inlay. The how or why does not concern the most of us very much. If we get fairly good results we are apt to be satisfied without further care or worry, but to the careful worker with a scientific turn of mind a cement is far more than a simple mixture of a powder and a liquid. It is an extremely intricate chemical compound depending for its durability and permanency not only upon the ingredients contained in it but upon the method of mixing, the temperature and atmospheric conditions under which the mix is made, and I might add the personality of the dentist himself.

The expansion and contraction, the porosity or imperviousness and the hydraulic properties have been pretty well worked out by the manufacturers within the last ten years until today they are offering us materials of the highest quality that human skill and ingenuity can produce, but that is only part of the completed process in any work in which cement enters as a factor. The care and

*Read before the Chicago Dental Society, Dec. 17, 1912.

cleanliness of materials and instruments, the methods employed in making the mix, the insertion into the cavity and subsequent manipulation, all belong to the dentist and upon these depend the final results, the success or failure of the filling, the crown, the inlay, or whatever it may be that is depending upon cement for its permanency.

On the care and cleanliness of materials and instruments it would seem unnecessary to say much to a body of trained dentists whose life work depends so much upon that very thing, but it is nevertheless a common occurrence to find dentists, who are extremely careful to avoid infecting root canals, but careless to cleanliness and detail when preparing a mix of cement, and men who are careless in other work are apt to be very slovenly when they attempt to mix cement. Why a dentist should work diligently to construct a crown, a bridge, or an inlay that is a credit to his skill and then allow it to be a failure because he was unable to properly cement it in position is a sad story, but it happens over and over every day and will probably continue to do so until all dentists shall become scientific students of every detail of dental work.

It is no uncommon thing to see dentists mixing cement upon a slab covered with the remnants of a previous mix. Others use the spatula for dipping the powder out of the bottle and then use the same spatula to dip out the liquid, letting more or less powder drop into the liquid bottle which immediately starts a chemical action and ruins the liquid for future use.

Never use anything but a perfectly clean glass slab to mix upon. Never dip an instrument into the powder, pour it out on the slab. Never dip an instrument into the liquid. Always pour the liquid from the bottle in which you buy it into a glass container having a glass telescoping top instead of a cork. The S. S. White office preparation bottle No. 6 is suitable for this purpose. Then have a short glass rod that will go into the bottle and allow the cover to go on over it. This is used to dip out the liquid and when not in use should always remain in the bottle. In this way no foreign matter need ever come in contact with the liquid. This method of keeping and handling the liquid will also prevent any possibility of crystallization, which so frequently occurs when liquid is used from the bottle in which it is purchased. Particles left around the cork when using become crystallized on exposure, and when the

cork is removed for subsequent use these crystals drop into the bottle and start crystallization of the entire mass, or in other ways alter its composition so as to make it unfit for use.

As to the methods of mixing cements so much has been said and written and so clearly and so well has it been done that I can do no more than to repeat and emphasize the directions already set forth.

The first requisite for a proper mix of cement is a perfectly clean glass slab, one from which every trace of cloudiness even, from previous mixes has been removed. This can best be accomplished by allowing the slab to remain for several hours in water to which a few drops of hydrochloric acid has been added. It will in order to do this be necessary to have more than one slab, and it will be a great convenience to have a number of slabs, say from two to three dozen, then they can be used freely, always having a clean one and at a convenient time all the used ones can be cleaned at once. I have not found it necessary to use the large beautiful glass slabs like the demonstrators at clinics use, but cut mine from ordinary window glass. By so doing expense and bulk need not prevent the dentist from having all the slabs he desires. I keep an acid bath in a glass dish in the laboratory and from time to time the used slabs are dropped into it, and those that have been in the bath are taken out, rinsed and dried and placed back in the cabinet ready for use.

The Spatula, another important factor, is too often lightly considered or entirely overlooked. Both the form for mechanical reasons and the composition for chemical reasons must be considered. Cement powder and liquid do not mix like many other substances do by the solid dissolving in the liquid, and then combining atom with atom or molecule with molecule, nor are they like a lot of glass marbles mixed with glue into a mass, a simple mechanical mixture, but each granule of powder coming into contact with the liquid has a thin layer on its surface dissolved by the liquid to form the cementing substance that binds the undissolved portion of the granules together. This process must be accomplished in a short time and the more intimately every surface of granule comes in contact with the liquid the better will be the resulting mix.

To accomplish this quickly and evenly a correctly shaped spatula must be used. This we find in the heavy double edged uniform

width German silver spatula on the market. Presenting an oval surface to the slab the granules of powder are caught under it and rolled forward and back into the liquid, thereby more nearly coating all surfaces of granules with liquid than could possibly be done with a flat springy spatula mixing with a patting motion. Vigorous thorough spatulation is necessary to secure a good mix, whether it be thin and creamy for an inlay or thick for a filling.

The composition of the spatula is an important factor. Owing to the hardness of the granules of powder particles of any metal spatula, with the possible exception of tantalum, will be ground off and enter the mix, thereby discoloring and changing the composition of it to a greater or less degree. An iron spatula will give a great amount of discoloration if thorough mixing is accomplished, but a German silver or coin silver spatula will not only give very slight discoloration, but will be a benefit to the mix chemically.

You have perhaps all seen Dr. Ames or some other manufacturer or demonstrator mixing cement at dental meetings, but do you make your mix that way in your office? All the little attention to minute detail is not done for effect; it is absolutely necessary if satisfactory results are to be obtained. The first small amount of powder must be drawn into and spatulated thoroughly with the liquid, then succeeding portions of the powder are drawn into the mix and thoroughly incorporated until a smooth mass is the result. Never should so much powder be taken into the liquid at one time as to make a clotty mass, difficult to work smooth.

During the past few years much attention has been paid to increasing the rapidity of the setting of cements until we have about reached the maximum speed at which most operators are able to work, even when small pieces, especially in bridge work, are to be done. The practice has been, when we wished a little more time in setting a piece, to mix cement thinner, thereby not satisfying the liquid with a sufficient amount of powder to bring out the best qualities of the given cement, but this was necessary until Dr. Ames conceived the idea of controlling the setting time by modifying the regular liquid by the addition of other liquids that will accelerate or retard the setting without changing the consistency of the mix, thereby allowing the operator to control the time according to the piece of work to be accomplished. This method will obviate many an otherwise failure by giving the dentist time to carefully and

thoroughly mix the cement without fear of its setting before he can get it into the mouth, and at the same time get the proper proportions of liquid and powder to make the best quality of mix chemically.

So much for the manipulation of the cement itself, but the battle is not half over. All this can actually and accurately be done in every case by a close application to detail and direction, but when it comes to putting the mixed cement into the cavity if it be for a filling, new difficulties face the operator, and the greatest perhaps of these is perfect adaptation to all of the walls of the cavity. This is comparatively easy in cavities in which access can be had to every margin, but in proximal and gingival cavities extending to or beneath the gum margin where the cement must be pushed to the wall instead of being pulled against it we find the greatest number of failures. The soft cement will adhere to the instrument with greater tenacity than to the cavity wall, so that after it is placed in position it will be drawn away again upon removing the instrument, leaving a fissure all along that side of the filling for the entrance of debris and micro organisms, and the early recurrence of decay. In many instances a matrix covering those margins difficult of access will aid in securing better adaptation. The great majority of failures in cement and silicate fillings are due to faulty manipulation, and not to the material used. Every little detail must be carried out exactly if success generally is to be attained. Every dentist has made some excellent silicate fillings and some very poor ones from the same material, and while mouth conditions may play an important part in the permanency of these fillings, I believe that the greatest fault has been in the mixing and insertion of the mass into the cavity. Polishing too soon before thorough hardening is responsible for many an imperfect margin by drawing the filling away from that margin.

Much more could be said along this line, but I shall leave that to be brought out in the discussion.

Thus far the greatest emphasis has been placed on the abuse of cements, and the impression might be that under existing methods they are of little value, whereas even so they are of great use and if properly managed they are the greatest tooth savers in the hands of the dental profession today. More badly broken down teeth are restored to long usefulness than could possibly be done by

any other means not dependent upon cement. Not alone has the cement filling accomplished all this, but cement in connection with crowns, bridges and inlays has been of inestimable value in the saving and replacing of broken and lost teeth.

The cement filling and I believe the silicate filling in its present stage can only be classed as temporary work, and it may be against the policy of many of you to do temporary work, but there are places where temporary work may and should be done. It may be for cosmetic reasons that the cement or silicate filling is preferred to the more permanent gold filling or inlay. It may be in the case of young children with decay in the permanent teeth advisable to place cement fillings for a time rather than subject the patient to the pain and nervous strain necessary for the placing of a satisfactory gold filling. Then, too, in the young patient the pulps are large and much nearer the surface than they will be some years later and an exposure is often the result in trying to excavate for a gold filling. A cement filling can be placed in such cases without extensive cavity preparation and the gentle irritation of the cement will cause the pulp to form secondary dentine to such an extent that a year or so later proper excavation for permanent work can be accomplished with little or no pain and slight danger of exposing the pulp.

No discussion of cements would be complete without reference to the oxyphosphate of copper which is rapidly gaining in favor both for durability and as a tooth saver in temporary teeth or in the permanent third molars. The only objection to it is the color, but in many instances this is no serious bar to its use. It is especially indicated in the filling of temporary teeth from which it is difficult to remove all decalcified dentin, the antiseptic properties of the copper being sufficient to prevent recurrence of decay either under the filling or around the margins. In badly decayed third molars where thorough cavity preparation is next to impossible the oxyphosphate of copper can be used to good advantage. The wearing qualities are almost as good as amalgam and far superior to block tin or copper amalgam, and while it is black itself it does not discolor the tooth in which it is placed as does copper amalgam. In setting a shell crown upon a root the dentin of which is blackened and perhaps infected but still solid, it is an advantage to use oxyphosphate of copper cement as you may then have the satisfaction of knowing that decay is not progressing under the crown and that

the adhesive quality is at least as great if not greater than any zinc cement obtainable. The adhesiveness and antiseptic properties of copper cement make it valuable for cementing posterior bands of regulating appliances.

Much complaint has been made of oxyphosphate of zinc cement on account of its disintegration when placed beneath the free margin of the gum but this is not true of oxyphosphate of copper. Neither is it irritating to the soft tissue. It may be used in cases of bifurcation of molar roots either by accident or decay where it will be less likely to give future trouble than any other material at hand. In these cases it is superior to gutta percha because it can be flowed into the opening and will set smooth where it comes in contact with the soft tissue while its antiseptic properties will prevent irritation, infection or suppuration, which so generally occur after the use of gutta percha or oxyphosphate of zinc cement.

The silicate cement, I believe, is a problem by itself, and the knowledge and experience acquired in the management of oxyphosphates are of little value in its use. In the first place it is not hydraulic and many failures result from exposure to moisture too soon. The mass sets very quickly on its surface, while the deeper portions are still quite plastic and early working with discs and strips will tend to draw the filling away from some of the margins. The remedy for this is to postpone polishing until a subsequent sitting. Silicate cement should be used only in easily accessible cavities in clean mouths.

I am not prepared to offer anything in regard to the mixing and manipulation of this material other than what the manufacturers have already printed, and I have simply introduced the subject for the purpose of properly getting it before this meeting for discussion.

I wish to thank the members of this society for your indulgence in patiently listening to a paper with no new facts or even theories advanced. I have simply presented the subject to you in the hope that the discussion may bring out many good things not known to the profession generally, and that the hearty coöperation of the members of this society may do much toward the enlightenment of all dentists on this the most difficult problem we have to face.

INTERESTING CASE OF TUMOR (LYMPHO-SARCOMA)
OF UPPER JAW IN YOUNG GIRL.

BY HENRY GLOVER LANGWORTHY, M. D., DUBUQUE, IOWA.

The following case is of rather general interest to dentists, first, because of the infrequency of jaw tumor in young adults as ordinarily encountered in private work; second, as regards possible difficulties in some instances of an exact diagnosis before operation; third, as illustrating that clinical deduction from past experiences are occasionally much more trustworthy than even the microscope itself in making a prognosis; and fourth, as clearly demonstrating that at the present time there is no known cure for the relief of malignant sarcoma tumors or of cancers.

Case History.—Young girl, sixteen years of age, negative family history. Some three years before coming under observation patient accidentally felt a small rounded thickening above the upper left lateral incisor tooth. It was not tender to touch, and she could assign no reason for its possible origin. The teeth were examined at the time by Dr. W. A. Meis and reported in good condition and the situation seemed in no way alarming. Gradually, however, the tiny tumor increased slowly in size, became somewhat oblong in shape and extended upward a bit in the direction of the left side of the nose. Patient also experienced at times some tenderness and pain about the region of the upper left lateral incisor or perhaps cuspid tooth. When first seen on March 17, 1910, she had come into the city owing to the fear that the growth above the gum might increase in size and eventually result in deformity about the mouth or face. The case was then immediately turned over to the writer for diagnosis and treatment.

Examination.—Examination disclosed a sharply circumscribed small oblong swelling about the size of a quarter apparently superimposed upon the left superior maxillary bone principally above the left cuspid and first bicuspid teeth. The growth was not tender to touch and excited no discomfort of any kind. Trans-illumination through the mouth by means of a strong electric light bulb showed that the antrum of Highmore was not affected. The possible area of bone involved also did not present any difference when trans-illuminated than did the normal surrounding hard bone of the jaw. Examination of the interior of the nose was negative with the ex-

ception of a very moderate chronic atrophic catarrh. Teeth sound so far as present methods of examination could disclose. The question of a definite tooth, nasal or antrum origin could not be settled in this case. Probable diagnosis sarcoma and immediate operation advised.

Operation.—Chloroform narcosis administered that afternoon



Encapsulated Tumor Growing from a Soft Spot in the Upper Jaw and Over-Lapping Sound Bone.

by Dr. Costello, with Dr. Meis, the family dentist, assisting. My operative procedure was as follows: Upper lip retracted, incision along labio-gingival margin above lateral incisor, cuspid and bicuspid teeth. Knife instead of striking hard bone or even cystic tumor entered at the lower border of a rather soft growth apparently growing from a small round spot in the bone not larger than the head of a pencil. Further dissection exposed a reddish tumor

overlapping sound bone and not attached to it. (Fig. 1.) The soft spot as mentioned from which the tumor grew out, appeared to be quite near the apex of the cuspid tooth and could be followed slightly into the alveolus, although one could not be quite certain of this point. All supposedly infiltrated bone was removed, however, and the root of the cuspid tooth cut off entirely. At the same time I deemed it wise to remove what appeared to be even sound bone well up along side of the nose, the anterior wall of the antrum and also along the jaw line to make extra sure that the operation would accomplish all that could reasonably be expected. Field then flushed thoroughly with normal salt solution, tincture iodine applied locally over the bone everywhere exposed and the incision closed with soft silk sutures. Good recovery from ether.

Post-Operative Course.—The wound healed quickly in eight days without any special amount of ulceration. Microscopical examination of the tumor somewhat to my surprise showed no malignancy, the pathologist classifying it as a type of fibroma. While these microscopical sections seemed satisfying in the extreme, still in order to do everything possible in a suspicious case the patient was placed upon thorough treatment of the triple iodides of iron, arsenic and mercury and in addition to this a course of X-ray treatments was given the jaw area by Dr. Blocklinger for many weeks. On July 14, 1910, however, the patient returned to my office saying that she thought she felt a slight thickening again on the left side of the nose near the gum but so slight that we could not be sure of it. Again, for the sake of thoroughness, various treatments were instituted, including X-ray, local injections, etc. On August 26 as recurrence of the growth had become only too evident to touch, I performed a second and much more extensive operation than the first.

Second Operation.—At the second operation as much bone was removed from the upper jaw, nasal and antral walls, orbit, etc., as could be done without too much mutilation of the face. As some bone going back even to the body of the sphenoid and over to the opposite jaw appeared soft as if slightly affected I rather questioned the benefits to be derived from further operating.

The patient made an uneventful recovery from the second operation and in spite of the amounts of bone, teeth, etc., removed, the facial deformity was hardly more than noticeable. Microscop-

ical sections of the growth and material obtained at the second operation showed the tumor to be a lympho-sarcoma. Further medical treatment of Coley's Sarcoma Serum and other cancer serums was instituted as indeed most anything which I could find in literature as shown to be worth trying. Two or three months later, at just about the time when the parents of the girl had become hopeful of recovery, signs of another recurrance took place, and the family, never despairing of hope altogether, tried treatments under a quack or two, was also operated and treated by a competent surgeon in another city, but finally died of the disease in December, 1911. Whether metastasis to other parts of the body occurred before death or not I do not know, but it may not have been unlikely.

The only comments which I have to make on the above case is the fact that any kind of a small growing tumor about the mouth in young people without discoverable cause and without ulceration should be regarded as a malignant sarcoma and no time be lost in securing consultation so as to share in a measure the responsibility of any line of treatment which may be proposed. As a rule the clinical diagnosis is rather easy to make in most of these patients, which is a distinct argument in favor of more frequent consultations between dentists and physicians in all border-line or doubtful cases.

AMPUTATIONS OF ROOTS OF TEETH.*

BY J. G. REID, D. D. S., CHICAGO, ILL.

The practice of amputating the roots of teeth for certain specific purposes has been recommended by dental surgeons for several decades. Therefore it cannot be charged that the writer is making a serious attempt to present something for your consideration that is in any way new or novel.

The initial purpose of the paper, however, is to briefly outline some of the discouraging results encountered in the pathway of the practice. I find myself somewhat handicapped in an effort to obtain some statistical information that is in any way reliable concerning the general success or failure of this branch of surgery. However, I can state with some degree of assurance that in the light of my

*Read before the Odontological Society of Chicago, November, 1912

own experience the record shows that failures have been considerably in excess of successes.

The amputation of roots of teeth is plainly a secondary consideration to the cause; the latter of which may be summed up under one or possibly two general heads, depending somewhat as to whether the operation involves a partial or total excision.

Partial amputation of roots may be performed on any one of the teeth left standing in the jaws, but the total amputation of roots must necessarily be confined to the multiple-rooted teeth.

The root ends of diseased teeth which are most likely to fall under the ban of surgical interference are usually to be found in the territory of an alveolar abscess, which in some instances is the secondary cause of the continued disturbance, as well as a prolonged hindrance to the restoration of health in the surrounding tissues where such abscess occurs.

Pyorrhea alveolaris, but another form of abscess very destructive in its nature to dental tissues, must be reckoned on as a source of danger leading up to the necessity of root amputation; this is especially true in connection with the multiple-rooted teeth. It is not infrequent that we find the lingual root of an upper molar entirely denuded of its natural covering, superinduced by deposits of salivary and serumal calculus; the same condition prevails with the roots of lower molars, one root only being effected, the second being in a state of perfect health and substantial in its socket.

In glancing over the contents of one of our leading dental journals of recent issue I came across a short article on root amputation, recommending the operation as a recourse for the removal of broken broaches or drills left protruding through the apical foramen. I prophesy that but few dentists have escaped this perplexing calamity, and to those who have happened to meet with such a misfortune may possibly find in this suggestion a panacea for such subsequent difficulties.

I shall purposely refrain from commenting on this suggestion at this time and leave it to my hearers for a probable or improbable solution.

It may be safely stated that where the roots of teeth are impounded in a bath of pus for a prolonged period of time they will ultimately be deprived of their membranous covering, the resultant

of which is a necrosed root—a dependable irritant that must be disposed of in some manner.

The unsuspected presence of a necrosed, or a partially absorbed root no doubt has been the means of causing many practitioners much mental anxiety, especially where they have failed in their efforts to restore the diseased parts to health by medicinal interference. Thoughtlessness on the part of many or a disregard of the knowledge which should enable one to early diagnose the foregoing conditions has had much to do with the early sacrificing of teeth that otherwise might have been continued in usefulness for a longer period of time; furthermore, an overindulged scope of familiarity with forceps-culture frequently breeds in the minds of many dentists an exquisite amount of contempt for diseased teeth in general.

The various means we have at our disposal which will materially assist in solving a diagnosis and also aid much in determining the extent of an operation may be summed up as follows:

Visional observations, sounding the root-surface with a steel or silver probe, and last an X-ray picture; any one of these signs is sufficient to a well trained observer, all three combined will establish unmistakable evidence to a neophyte.

Having fully determined upon the necessity for a partial root excision—and this presupposes that said root has undergone the proper and necessary preliminary treatment with a final filling inserted therein—the already established sinus is to be increased in diameter by making a slight lateral incision in opposite directions to the opening, this to be followed with a few packings of gauze, which will usually bring into view very distinctly the end of the root. The amount of tissue to be removed will have some influence in determining as to how it can best be accomplished expeditiously; if only a minute portion of the end of the root is to be removed, it can best be done with a suitably selected stone run by the dental engine; if, however, a greater area is involved I would first use a diamond shaped drill, passing it through the root and succeed this with a fissure bur, cutting both ways until the end is severed from its parent. Final smoothing of the roughened end left by the bur can best be done with a fine Arkansas stone. Thorough flushing of the cavity with a warm normal salt solution immediately following the operation places the surrounding tissues in a most favorable condition for future recovery.

Subsequent treatment of the wound is usually a simple one, which consists in keeping it open for a few days for drainage, and the application of any mild stimulating antiseptic solution at proper intervals to insure cleanliness. This seems to be all that is necessary to insure a reliable and rapid restoration to health.

Thus far we have been dealing with the management of partial amputation of roots; for comparative considerations some attention must be given to the total amputation of roots, which as has already been stated must be confined to the multiple rooted teeth.

The loss of one root of an upper molar is not so palpable an injustice to the organ as the loss of one root of a lower molar, although the injury must be considerable in either case; however, from an anatomical aspect the lower molars are as a rule more highly favored with firmer environments than are the upper molars; nevertheless, we can naturally expect that the latter will serve the individual purposes of mastication much longer than will the former under the same general conditions.

The interaction of the cusps on opposing teeth plays a very important part toward conserving masticatory relations with a molar deprived of a root, where such conditions are absent the molar is very likely to become shifted to such an extent as to disqualify its usefulness, unless interposed by some mechanical device attached to the tooth to prevent such movement.

The technic involved in amputating a root in its entirety does not materially differ from what has already been described; further than to state that we may experience an occasional difficulty in dislodging an amputated root from its socket; when this condition arises it must be overcome entirely by the ingeniousness of the operator himself at the time, as no definite rule can be applied.

I recall one case of a pulpless lower first molar where the distal root was found to be in the early stage of absorption, a glance at the situation prompted me at once to separate the crown down to the bifurcation with a disk, then I extracted the distal root with its portion of the crown; the mesial root was treated and filled—crown filled—result plus the equal of a third bicuspid. I believe this to be a very good practice to follow in the majority of such cases. It is to be understood that I do not pose as an expert in this special line of surgery; in fact, I would rather have you believe that my experience is decidedly limited as compared with many

others engaged in this work. I have been sadly disappointed in the results obtained. In the majority of cases thus far coming under my observation, the greatest loss has been confined to the partially amputated roots; the cause of the failure being a recurrence of the primary lesion.

The end of the root after a time continues to be absorbed, eventually the tooth becomes shaky in its socket much after the fashion of a deciduous tooth about to be cast off. In fact, the two conditions are almost identically the same. The process seems to be physiological in appearance rather than pathological.

In conclusion I have only a theory to offer in explanation for the failures which I have experienced in the practice of root amputation. When the root end of tooth is once deprived of its peridental membrane it seems to me that the root is forever afterward in a receptive condition for the absorptive processes to continue in activity. The membrane certainly must play a very important part in contributing nutrition to all parts of the cementum and any destructive interference with that function places the root in constant jeopardy.

So far as my knowledge goes, there is no evidence that the membrane is ever renewed, and if such is a fact, I feel confident we can never hope to be able to save partially amputated roots for any great length of time by the practice as herein outlined in this paper.

PROCEEDINGS OF SOCIETIES.

WISCONSIN STATE DENTAL SOCIETY, FORTY-SECOND
MEETING, HELD AT OSHKOSH, JULY 9-11, 1912.

DISCUSSION OF THE PAPER BY DR. PRINZ ON "MODERN METHODS OF
PRODUCING LOCAL ANESTHESIA."

DR. FEDERSPIEL:

It is indeed fortunate that the committee succeeded in bringing Dr. Prinz here, for I am sure that he has covered the subject of local anesthesia from cellar to garret. I wish it were possible that Dr. Prinz's lecture could serve as an indelible imprint in the minds of all men who practice the healing art. About two years ago I had

the pleasure of seeing Dr. Prinz in his research laboratory at Washington University, and there I first became awakened to the importance of novocain anesthesia, and when I returned to my office I began to look into it and was so gratified with the result that I insisted that the council of the alumni of Marquette University get Dr. Prinz at our meeting that was held two years ago. There Dr. Prinz, some of you remember, for two hours demonstrated over and over the importance and indications of local anesthesia, and I remember that time and again I meet members here and there and everywhere who will say "Federspiel, this was the best clinic we have had along the lines of local anesthesia." I do not wish to go into this subject in detail, because Dr. Prinz has covered it fully, and I hope that the members of this society and elsewhere will take it upon themselves to carefully read the lecture of Dr. Prinz so as to become familiar with the subject of local anesthesia.

DR. HALL:

Mr. President, before saying anything relative to this question I wish to extend, in behalf of Dr. Babcock, his greetings and to say that he regrets very much his inability to be here at this discussion. He told me to convey to you the fact that he was extremely sorry not to be here at this meeting; that he considered Dr. Prinz's paper one of the strongest arguments, if not the strongest argument that he had ever seen, and thought that it would be well for every member of this society to carefully read the printed copy of the doctor's paper. On my own behalf I would like to say that after reading this paper and thoroughly digesting it, it seems to me that the doctor has left nothing undone. The paper in itself is a classic. It shows scientific research backed up by arguments that no one can disprove. Dr. Prinz's paper shows the results of an endless amount of experimental work. We are more than fortunate in having this paper before us at this time, and I trust that every one of you has profited as much by it as I feel that I have myself. I don't know that I can add anything more, as Dr. Federspiel has said before. Dr. Prinz has so thoroughly covered this ground that there is practically nothing left to be said. With this I will conclude my remarks, thanking again the essayist for coming up to our society meeting at this time and giving us this most excellent paper.

DR. KUHNMUENCH:

Mr. President, the essayist, Dr. Prinz, deserves the personal

thanks of our organization; in fact, the entire dental profession. The work that he has done along the lines of local anesthesia has been a revelation to me. I have objected in the past to local anesthesia, mostly on the ground of work done with cocain. This is a new field for me and upon his suggestion I will give it a trial. As he puts it, there is absolutely no danger. I wish to thank him for appearing before our organization, and I know that you all feel the same way. It has been a good lesson and good teaching. If I got nothing more out of this meeting than this one paper and demonstration I would feel I was repaid a thousand times. In person I again thank the gentleman.

REPORT OF CLINICS.

C. E. BOTTOMLEY, Burlington, Conservation.

C. B. CASE, Milwaukee, Wis., Orthodontia.

This clinic consisted of the exhibition of a patient of the Milwaukee Free Dental Clinic recommended for orthodontia treatment. In addition to the extreme congestion of the anterior teeth the case is interesting on account of the healthy condition of the tissues around the shell of an upper incisor root which has been moved fully one-quarter of an inch without causing the process to disintegrate or the gum tissue to recede. Work of regulation has been carried on for nine months and is within a few months of completion.

This clinic will be repeated at the next annual meeting of the society and will show the completed case with retainers in place.

J. S. DANFORTH, Sheboygan, Wis., Porcelain Crown on a Split Root.

Showing a method of root restoration and crown base by using a gold matrix in which was cast the part restored and the base of the crown, the matrix becoming a part of the finished piece.

M. N. FEDERSPIEL, Milwaukee, Exhibit of New Appliance for Moving Anterior Teeth Bodily.

W. F. GARY, Neenah, Method of Casting a Gold Cusp to Band.

After band has been fitted to root, cover with piece of inlay wax and take bite. Remove band and wax together, and carve cusps, as occlusion indicates. Cement to sprue, and place on cone. Invest to top of band; when set, melt out all wax; press thin piece of heated paraffine over rim and burnish into cusps to desired thickness. Trim investment to cone, place ring and finish pouring. When set and dry cast as usual.

A. L. GIFFORD, Oshkosh, Wis., Orthodontia.

Exhibit of patient showing results obtained by orthodontic treatment. Model showing case before treatment and patient when complete.

Also model showing the cuspids extracted, making a case in orthodontia very complicated and impossible of perfect results.

H. G. HUDSON, Oshkosh, Cast Gold Crowns.

The method of making crown as follows:

In short bite molars where a cap crown would cause gum irritation the tooth is devitalized and pulp chamber enlarged to a tapering pit. Inlay wax is then pressed to bottom of pit and over surface of tooth which is ground flat flush with the gum. Remove and cast. Build up cusp with wax and cast and solder together.

A. A. JENNINGS, Milwaukee, Wis., Anatomical Articulation.

The mechanical side of anatomical articulation. A method of articulating full dentures, consisting of the following steps: Trial plates. Obtaining the condyle paths. Carving the compensating curves. Getting the exact dimensions of the required artificial teeth. Determining the course of the condyle paths. The protruded bite and manner of obtaining a normal occlusion. A short cut adjusting the condyle slots. Arrangement of the teeth and perfecting the articulation.

WALTER N. MURRAY, Minneapolis, Minn., The Use of Twentieth Century Crowns for Small Bridge Cases.

Remove all corrugations from pin with file, also smooth surface of pin thoroughly. Grind surface of crown and polish same where solder attachment for bridge is desired. With warm wax press and make model directly in root of tooth working the wax carefully up into proximal surface of crown where solder attachment is desired. Remove from root and gently remove wax from crown and pin with small explorer. Cast in usual manner, being extremely careful in investing model.

H. G. MORTON, Milwaukee, Amalgam Models for Gold and Porcelain Inlays and Crowns.

Showing a practical method of articulating as well as a positive model in the making of gold inlays as well as porcelain inlays and crowns, by using amalgam as the base metal for models and articulating same before finishing.

E. B. OWEN, Merrill, Exhibit of Appliance for Retaining Fractured Superior Maxillary.

W. T. REEVES, Chicago, Ill., Porcelain Shell Crowns.

Demonstrating preparation of tooth with various stones run under constant application of cold water with the minimum of discomfort to patient. Making of matrix in the mouth—soldering cone and folding excess upon the sides and over end, stiffening cone so it will resist the contraction of porcelain. Using rubber plate tooth for labial surfaces of anterior teeth adjusting in the mouth so as to have it absolutely right in shade and shape. Removal of matrix and facing in wax impression, removal of same from wax impression and application of porcelain and baking.

J. HOWARD BROOKS, Neilsville, Wis., Cast Gold Base.

Root out beneath free margin of gums—lowest on labial and lingual—wax warmed and placed clasp metal pin, then placed crown on pin and forced pin to place there by forcing out excess of wax—carved wax—removed crown, chilled wax and removed same with pin, crown placed on pin, wax carved to fit about circumference of crown—pin, wax and crown replaced; again removed wax and pin and cast; crown then set in usual manner.

W. R. CLACK, Mason City, Iowa, Gold Foil Filling.

Cavity in disto-occlusal surface of lower right first bicuspid. The usual Black preparation was made, one and one-fourth sheets of No. 4 unannealed gold in the form of cylinders was placed in the gingival part of the cavity. Those cylinders placed against the lingual and buccal walls were not condensed gingivally, but were left standing against those walls and were "tied" against them by the annealed gold that was used to complete the filling. About four sheets of gold were used.

C. F. CLARK, Menomonie, Gold Filling in Upper Bicuspid.

Disto-occlusal in upper first bicuspid using Black method cavity preparation—filling with non-cohesive foil and Packs cylinders.

H. B. CLARK and R. R. BOSWORTH, Chicago, Ill., Nitrous Oxide and Oxygen Analgesia for Preparation of Sensitive Cavities.

DR. H. E. FOX, Ironwood, Mich.

Combination filling large first right lower molar buccal occlusal filling, using duplex gold and tin.

AUSTIN F. JAMES, Chicago, Ill., A Demonstration on Pyorrhea and Oral Prophylaxis.

A. W. KOLL, Theresa, Wis.

Presented a patient with extreme mouth deformity and showed result obtained by orthodontia treatment.

A. J. KUHNMUENCH, Milwaukee, Wis., Somnoform Anesthesia in Various Dental Operations.

Case No. 1. Young lady, nervous temperament; highly so. Administered Somnoform for extraction of root of four permanent molars—badly broken down. Administered Somnoform three consecutive times. During anesthesia showed signs of nervousness. Work done absolutely painlessly. After anesthetic, condition normal.

Case No. 2. Man, age 35 years. Extraction of right upper third molar, badly broken down. Administration of Somnoform and extraction. Length of time from beginning of anesthesia to time of leaving chair, two minutes.

L. A. MEYER, Oconomowoc, Cavity Preparation Under Nitrous Oxid and Oxygen Analgesia.

Patient, lady, age 20, nervous temperament—rubber dam adjusted. Patient placed in analgesic stage and operation for the preparation of four cavities for gold fillings completed in about thirty minutes.

Patient experienced no pain or discomfort during cavity preparation.

Cavities prepared medium size proximal in upper centrals and laterals.

L. H. MOORE, Appleton, Wis., Soft Filling Without Use of Rubber Dam.

Lower right second molar crown cavity.

E. E. NUSSEL, JR., Chippewa Falls, Gold Filling on Mesial Surface of Upper Right Central.

Demonstrating the advantage of extension for convenience as well as for prevention, using Black system of instrumentation. Filling made of cohesive gold.

F. S. ROBINSON, Chippewa Falls, Gold Filling in Upper Bicuspid Using Non-Cohesive Gold in Gingival Third.

Upper left second bicuspid—cavity in mesio-occlusal surface. Used one and one-fourth sheets non-cohesive gold in gingival third and completed filling with cohesive gold—filling seven sheets—hand mallet and assistant.

H. M. UEBELE, Milwaukee, Baked Porcelain Jacket Crown.

First remove enamel and shape root to a cone shape with a shoulder below the gingival margin. Make a small matrix of copper to fit over root and fill with modeling compound. Take impression

of same. Then take bite in wax. Make cement root and place same into the bite and run out the models. Make platinum matrix over cement root and build up crown on same, using the models as a guide.

F. G. VAN STRATUM, Hurley, Gold Filling.

Gold filling in lateral, using automatic mallet.

E. J. WEAVER, Milwaukee, Surgical and Systemic Treatment of Pyorrhea Alveolaris.

Showing implanted porcelain root. Also showing case of successfully treated pyorrhea of four years' standing.

DR. J. E. WALDRON, Eau Claire, Anterior Crown, Gold Cast Directly on Porcelain.

Left upper central incisor crown porcelain facing I. P. dowell, gold cast directly on facing by waxing dowell and facing in apposition with casting wax, and while same is soft press into place, trim and invest and cast in usual manner. The precaution to use to obtain certain success is to trim wax carefully and be certain that no film of wax overlaps any margins where gold might impinge in cooling and heat case to a red heat to center and cast and let cool slowly.

J. B. WILLIAMS, Ashland; Short Operations Without Rubber Dam.

Demonstrating how it is possible to have a dry cavity in short operations without the rubber dam, by placing a cork between the teeth, retaining either napkin or cotton rolls.

DR. RAYMOND J. WENKER, Milwaukee, Wis.

DEEP INJECTION OF ALCOHOL IN TIC DOULOUREUX.

One patient presented: History—W. R. H., nationality, German-English; age, 51; slender stature; weight, 124; nervous temperament; occupation, office work; habits, very good; no syphilitic history; no unfavorable hereditary history of any kind. Was seized with violent "toothache" in the left mandibular region about eleven years ago, consulted a dentist, but he was unable to find any explanation of the paroxysms, as the teeth were all in perfect condition, neither decayed nor abscessed. The pains continued and the teeth became very sore, whereupon he had some of them extracted one after another, under the protest of the dentist. Not being relieved, he insisted on having the remainder on that side below extracted, beginning distally and continuing forward to the cuspid. This

gave relief for a short time, but as the pains reappeared he sought relief in Osteopathic, Homeopathic and Allopathic treatments, including electrical treatments. Some of these treatments gave temporary relief, as might naturally be expected. At times the paroxysms were excruciating, so much so that the patient was frequently unable to eat or talk. Many a time he went to work without breakfast, and sometimes, as they would partially or completely subside during the forenoon, he took lunch downtown. Some days he was unable to eat scarcely anything.

About a year after the extraction of the teeth he went to a general surgeon of national repute, who performed the Garretson operation on him, for the removal of the inferior dental nerve. The next day after the operation the patient, of course, suffered intensely and then the pains gradually subsided, although not entirely, and remained in this condition for about a year, when they returned with former severity. The patient again consulted the surgeon who performed a second Garretson operation on him. This time he carried the external incision to the angle of the mandible ligating the facial artery, and removed much more of the nerve. The later operation gave him much more comfort, suffering only occasional twinges until the spring of 1910. It then returned with renewed fury. He withstood it for several weeks until it finally floored him, and he was compelled to take to his bed. This was the first time he had completely given up. The pain was so intense he could not remain on his feet, as every step or exertion increased it. After remaining in bed for several days without eating or sleeping he sent for a physician, who injected morphine to relieve him. The following day he was removed to a hospital and osmic acid was injected into the mental foramen. This was in May, 1910. The next day he suffered intensely, but quite promptly after that the pains disappeared. About a month later the lower left cuspid tooth loosened and "pushed out into his mouth" and a persistent suppuration set in. This was controlled with difficulty. In the fall of 1911 the pains began to return and the patient took a great many so-called Chiropractic adjustments. He continued, taking these treatments until the following February. His weight previous to 1901 was 150, which, as stated above, is now 124. He expresses the belief that these treatments staved off a severe attack. About January 1, 1912, he began to suffer with pains around the nose and infraorbital region on both sides.

Examination of the patient on July 10, 1912, showed a healthy appearance of all the tissues and no pain upon pressure anywhere. The upper right central had previously been devitalized and the root canal filled. The patient complained at this time of a "lame" and deep seated sore feeling in the left mandible. This frequently felt stiff and slightly swollen, upon arising in the morning, which he relieved by massage. He frequently observed a distinct "bad taste" from that part of the mouth during these periods of swelling.

I had X-ray views taken of the upper anterior, left central and left mandibular regions. Fig. 1 shows a reproduction of the left mandibular skiagraph. Fig. 2 is a reproduction of the patient about eight years ago. In the location of the molars are disclosed two dense toothlike objects in the body of the bone. The size of one was $5\frac{1}{2}$ by $11\frac{1}{2}$ m.m. and the other was $5 \times 8\frac{1}{2}$ m.m. The smaller one was situated 5 m.m. anteriorly of the larger one and both were in a perpendicular position. The smaller one had the appearance of a broken off root, while the larger was tapered on both ends, having the appearance of a supernumerary tooth. The lower end of the larger one crossed the inferior dental canal.

Having found what appeared to be an explanation of the course of the paroxysms, which could easily be removed, the deep injection of alcohol was, of course, counterindicated in this case. The case, therefore, turned into a simple surgical clinic.

During the operation for the removal of these teeth it was conclusively demonstrated that the larger tooth was a supernumerary as its upper end was completely capped with enamel. The fact that this tooth was a supernumerary and that its lower end encroached upon the nerve suggests that it was the original source of the neuralgia.

The local arrangement committee had difficulty in getting the patient to come to the clinic. He had had so much done with such indifferent results that he was thoroughly discouraged. But as soon as he saw the skiagraph he was entirely submissive.

In the meantime I was elected to the office of president of the society and the new duties required my immediate attention. I therefore turned the patient over to Dr. Rasmussen, who removed the teeth. The technic of the operation described by the doctor follows:

A. T. RASMUSSEN, La Crosse, Wis., Surgical Operation for the Relief of Tri-Facial Neuralgia.

CASE: Patient, male, white, age about 45 years, occupation office work, general health and nutrition fairly good.

HISTORY: Patient had suffered for ten years or more with a typical case of trifacial neuralgia, the seat of pain apparently being in the lower jaw in the region of the left molars. One after another these teeth were removed until all the molars were gone, without any relief. An operation for the removal of the inferior dental nerve was then performed with only temporary relief. With the return of the pain a second operation for the removal of a longer section of the inferior dental nerve was advised and performed, with no better results.

At a later date osmic acid was injected into the inferior dental nerve. This caused sloughing of the tissues and the second bicuspid and a part of the alveolar process was lost. This apparently healed, but patient has since had a "bad taste in the mouth," he as expressed it, the pain returning again.

CLINIC: The clinic consisted of taking a skiagraph of the jaw, which showed, upon examination, two supernumerary teeth, so situated that they were impinging upon the inferior dental canal. The operation was then a matter of cutting down upon these and removing them. Upon cutting into the body of the maxilla the outer plate of it was found to be extremely hard and immediately below this a large area of carious bone extending from the position of the first molar to a point in the ramus slightly higher than the inferior dental foramen. This condition involved the inferior dental canal its entire length back of the position of the first molar. All diseased bone was removed, entirely obliterating the inferior dental canal. The edges of the bone were smoothed with curette and surgical bur and the wound packed with iodoform gauze.

NOTE: Three weeks after the operation my colleague in charge of the case reports the patient recovering nicely, with no return of the pain.

T. M. WELCH, Waupun, Wis., Gold Filling, Hand Mallet.

Gold filling Rowan's cylinders—Hand mallet.

W. F. FAUST, Milwaukee, Synthetic Cement Filling.

Cavity prepared after adjusting rubber dam and securing sufficient separation. The upper right lateral was capped with zinc oxid and oil of cloves. Marked undercuts were obtained in this and the right central, they being proximal cavities. The synthetic cement

was mixed to a consistency such that it would not follow the spatula. Both cavities were filled with same mix, and the cement forced to place into the under cuts, then an excess added and all firmly forced in place with a celluloid strip coated with cocoa butter. This was held in place for about three minutes removed, and the fillings coated with cocoa butter for about ten minutes, when the two were polished with fine cuttle fish strips coated with cocoa butter. A very fine finishing bur coated with cocoa butter was used on lingual surface near gum line. The fillings which could now scarcely be detected were coated with the wax, finished with the cement, and the patient excused.

N. E. UELMEN, Milwaukee, Prophylaxis, Using Carmi-Lustro for Final Polishing.

Painted teeth with disclosing solution. Cleaned teeth with Carmi cleaner, using tape charged with Carmi cleaner. Polished teeth with Carmi-Lustro, using same on buff wheels made of moose hide discs, and charging tape with the Lustro, drawing them around the teeth, polishing necks of teeth.

DR. C. W. BENSON, Duluth, Minn., Technique of Making Pyorrhea Splints.

Lower six anterior teeth involved in splint. Incisors loose. Cuspids firm.

Devitalize all of the six teeth. After canals are filled, ligate them to the proper alignment and bite, using waxed floss silk. Then taking a piece of metal of any kind of the proper length and breadth to include these six teeth, bend it to conform approximately to the labial surfaces of these teeth.

Now apply a thin strip modeling compound to the concave surface of the cup which you have formed and take an impression of the labial surfaces of the six teeth. This merely serves as a guide for future operations, a sort of splint in itself. Now, remove the silk ligature, apply rubber dam over first bicuspids and all intervening teeth. Replace modeling compound impression and see that teeth fit into it as they should.

Holding this in place, take impression of lingual surfaces of the teeth in Taggart's investment. This is done with the rubber dam in place, which prevents any disturbance of the impression by the tongue or saliva. Remove impression carefully. With wax spatula and Taggart's wax make a wax model upon this impression just procured.

If melted wax is added over the whole extent of the impression at once it will upon cooling shrink and warp, thereby drawing away at the ends and carrying a little of the investment with it, which will spoil the work. To obviate this trouble add wax first enough to fill impression of one cuspid, and then skip over to a central and then to the other cuspid. Let these cool and then add wax to remainder of impressions. After the surface of impression is covered with inlay wax, the rest of the wax model is built to desired thickness with pink base plate wax. Sprue is now inserted, case invested, and in due time cast in Melotte's metal. This gives us a die upon which to swage, which is almost perfect. Two pieces of 24-karat gold 34 gauge are swaged, post holes are punched through both thicknesses and sweated together with 18-karat solder. They are then placed in the mouth, posts pushed through into place in root canals, sticky wax added, case removed, invested in Brophy's investment and 18-karat solder flowed over the entire piece. Cuspid posts are 17 gauge gold wire, the others 17 gauge iridio-platinum wire. All threaded from apical end half the length of post.

The lower border of splint should extend to the cingulum of each tooth and a slight surplus should be left at the incisal edge. After splint is set with cement the incisal edge is finished in the mouth.

It is well to grind away some of the labial surface of each tooth at the incisal, so as to minimize the stress in mastication, which stress has a tendency to dislodge the loose teeth from the splint.

J. P. FLAHERTY, West Bend, Wis.

Demonstrated pressure anesthesia with new foot power pump.

CHICAGO DENTAL SOCIETY.

A regular meeting was held December 17, 1912, with the president, Dr. J. H. Prothero, in the chair.

Dr. George C. Poundstone read a paper entitled "The Use and Abuse of Cements in the Dental Office."

DISCUSSION.

DR. J. E. HINKINS:

Mr. President, I do not think there is much for me to discuss in connection with this paper, as I cannot see how it can be improved. I read the paper over very carefully and I saw that there

were some things that I do not follow in my own office as carefully as the manufacturers do at the exhibits. I did not receive a copy of the paper until yesterday, and in the meantime I had gone back to some of the work I did on cements about twenty years ago. First, I will say that everything Dr. Poundstone suggested I fully endorse, but in looking back twenty years I find that some of the chemical work I did was about as crude as the cements then were. The first work I did was with our friend Harlan. We got a number of glass tubes about three-eighths of an inch long and filled them with different cements. Some of them expanded and some contracted. We found at that time that the cements that expanded the most contained a considerable quantity of phosphate of potassium. We also found that this was caused by absorption of moisture from the atmosphere. Those that contracted contained considerable phosphate of sodium. That would give up its water to the atmosphere and hence it would contract. From that time to this there has been wonderful progress. The next thing that caught my attention was phosphoric acid: I do not believe that the powder has so much to do with the failure of cements as the acid. Dr. Buckley and others know the peculiarity of phosphoric acid. The phosphoric acids vary in proportion to the oxygen, if I remember correctly, 2, 3 and 4, and also in proportion to the water. Heat and cold will act on the different acids and change their properties. I will say that there is work being done along this line by some of our universities, and during the later months some very good work has been done with the phosphoric acid radicle, and they call it phosphorescence. I am very much inclined to believe that we will never get very much better results until we have some other acids to work with.

When Dr. Poundstone read his first paper on cements some years ago I had the privilege of opening the discussion on that paper. If I remember correctly he threw a number of slides on the curtain which showed that it was like looking at a sieve. There was a number of air spaces in there. At odd times I went to work on that and found that with cements I would vary all the way from $1/300$ to $1/800$ of an inch in thickness. I found when I mixed my cement it would take from two to four per cent more acid to make a cement that would let an inlay to place so that you would not have to grind it half an hour. You had to add that much acid to get the cement thin enough. Then I tried analyzing it and I also found it

took from two to six per cent more acid than it did for a good cement filling where we took about equal proportions.

Some years ago Dr. Head wrote a paper on cements and inlays and he recommended that the proper method of setting an inlay was to let the edge of the inlay and the tooth pinch together like that on the outer edge, and then grind on the inside around the inlay and also put a little groove if possible in the tooth. Cement always takes on an oval form in setting, and since he offered that suggestion I have had very little trouble with my inlays coming out. I find they last very much better and I think I can use the cement a little thicker, which also adds to it.

The next notation I have here is regarding silicate cements. I have worked with these faithfully and I guess unfaithfully. I have had my successes and failures. I don't think I could do any more than to say amen to what the essayist has said. I think the liquid is as much of a proposition as it is in the phosphate of zinc.

Now, there is a point here which is not referred to in the paper: the action of organic acids on cement. It is dear to my heart, but I don't know anything about it. The action of organic acids is a question we know very little about. We do know that they are washed out. Then we have to take into consideration the enzymatic action, the hydrolytic and catalytic and the forces in the mouth, the pressure of the breath and the chemical changes that we know nothing about. Is it any wonder that it washes out in the mouth?

DR. E. D. COOLIDGE:

Mr. President, Dr. Hinkins in his discussion took up the analytical side of the question, and so I will confine my remarks to the practical side of it. The essayist has given us instructions for using cements, and if followed we would probably have very little trouble. The success or failure that we have with cements, I think, is purely a matter of the personal equation. If a man is careful he will have very little trouble with the cements we have today. If he is careless in any part of his work he will probably have a great deal of trouble and failure. The whole thing comes down to a matter of detail, care in mixing and in handling.

The essayist spoke of the mixing slabs he uses being thin slabs as pieces of ordinary window glass. I should think a change of temperature would have a great deal to do with the cement, and it would be better to have a thicker glass. He spoke of the metal

spatula leaving part of the metal in the mix. That is true and we should use only a spatula of tantalum agate, bone or possibly German silver, but German silver will discolor the cement. A spatula with rounded surfaces will mix better. To get the right consistency of cement before using it for any purpose I always make it a point to have the cement mixed thick enough so that it will string from the spatula when raised from the slab. When setting an inlay you have to hurry to get it in place and before a minute is gone it should be set quite hard. I think we put our mix in altogether too thin many times. For crowns the cement can be mixed still thicker. The thicker we can mix it the more permanent it will be. If we use methods to get pressure we can use the cement mixed considerably thicker than one would imagine. Many a time I have felt that it was necessary to take the cement off the crown and make a new mix. I always try to have the crown fitted to exact occlusion, so that if it does not go to place the patient will notice it immediately. I have found in many cases where it seemed altogether too stiff that I was mistaken, and by putting a great deal of pressure on the crown I found I could get it to place, and I feel that this is much more permanent. Often where a large mix is necessary, for instance, in a bridge with a number of abutments, we have a large amount of cement on our slab. If we should measure it we might find that we do not put in half as much powder in proportion to the liquid as in a smaller mixture. I am getting more careful because it is usually in the larger pieces that the failures occur. This is not a discussion on how to get the pressure on inlays or crowns, but I find I can squeeze out more cement by having a small piece of orange wood cut short enough to rest between the cusps and let the patient do his own pressing. Then he will not press too hard, and yet if you encourage him, he will press hard enough to squeeze out the cement after you have tapped on it with the mallet. I think a large proportion of our success with cements is due to the fit of the artificial parts. We cannot expect the cement to take the place of the gold. It is a fault of ours often in not getting the inlay properly fitted to the cavity first. It is the same with the crown. If the band is properly fitted there will be no failure with the cement. There is another place where failure may occur, and that is in getting the cement in all parts of the cavity or surrounding the band of the crown. In our hurry we may fail to get the cement to follow the edge of the

tooth up into the gum. We must push the cement around and get it across that gingival margin before we put the inlay in place and have the inlay coated also. Otherwise there may be a failure, but that will not be a failure of the cement. It is a failure in technique.

Cement is purely and simply temporary as a filling; however, there is a field for it. The essayist spoke of a number of places where we are justified in using it. It is successful to a degree, depending largely on the care that we put into the work, but still it is only temporary.

The paper covers the field very thoroughly and is well written. I wish to compliment the essayist on his work.

DR. W. V.-B. AMES:

Mr. President, I am glad that I happened to be in town this week, and I was pleased to see a copy of Dr. Poundstone's paper for a few minutes. Dr. Poundstone feels very directly what he considers should and should not be done, and the most I can say is to caution you to do all he advises and leave undone what he advises. When you are making a mix of cement have your mind on that and nothing else. You cannot have your mind on a golf score you made the day before or anything of that sort. I am rather pleased that the day has come when Dr. Poundstone will advocate, as he does, the careful treatment especially of the liquid in the cement, and in addition to its being recommended by men like Dr. Poundstone, it is pleasing that cement manufacturers generally are discarding some of their apparatus and are coming generally to take care of the liquid, especially by taking care of it in the bottle where it is not exposed to the air or contamination.

I do not suppose there is any metal spatula which will not become corroded by mixing cement. German silver can be affected by abrasion. The main objection is the discoloration. The tantalum spatula which has been advocated is proof against chemical action and is a shade harder than some other metals, but a mix with a tantalum spatula cannot be made without showing discoloration. You can start with a white cement and come out with a dark gray one when mixing with a tantalum spatula. I prefer the heavy glass slab to a thin piece, and yet it would be a little extravagant to have as many of those as Dr. Poundstone says he would like to have. If the thin glass plate is not held directly in the fingers there would not be much change of temperature imparted by the hand. In any

case, when the glass slab becomes scratched, throw it away. If you are using window glass you can throw it away with a better heart than if you paid \$1.50 for it. This question of temperature of the slab impresses me as being of greater importance the more I see of the difficulties experienced by dentists in cement mixing. To become master of the situation under all temperatures and atmospheric conditions, I believe that the progressive and careful dentist will, in time, come to be governed by the readings of a hygrometer in his operating room and use some form of mixing slab which embodies a thermometer and be careful to have that thermometer indicate a definite temperature.

The simplest form of slab answering this purpose is a bottle, with a thermometer inserted through a perforated cork, and containing water showing a definite temperature by this inserted thermometer attachment. Water thus contained at 60 degrees temperature will cure many of the difficulties experienced when the mix of cement is made at the temperature the slab happens to be when a mix of cement is needed.

If any slab becomes scratched you cannot make a proper mixture of the oxyphosphate of zinc. It comes out in a clotted condition many times and I have seen times when it was impossible to make a good mix on such a scratched slab. I prefer the slab scratched or rough for mixing the silicious cements. It takes hold of the mix better and you can better control it beneath the spatula. When mixing cement for crowns or inlays, by all means mix it as stiff as you can. The nearer you can come to a stiff, creamy, gummy substance the better the cement will be, and when it comes to setting a large piece, adapt the liquid to the case in hand. For large pieces have a liquid that will give you sufficiently slow setting to enable you to incorporate a decent amount of powder and wait a little longer for the cement to set. I wish that the silicious cements from the time they were first offered had been better than they were. It would be a far happier subject. You were offered cements five or seven years ago as a perfect filling material and either changes of the manipulation or the formula have been made until the cement offered several years ago as a perfect filling material has now been superseded by something else and you are told not to use the old or the old with the new because they are entirely different. Some of the materials were never right, and

in spite of all precaution and instructions it was not possible for you to make a good filling. As to this material being permanent I have seen results which satisfy me that there is a great deal to it. If I and others have been able to make silicious fillings which inserted five years ago look as if they might have been put in last week I do not know why with proper materials and proper manipulation it is not possible to have a permanent cement, if a dozen or twenty years might be called permanent.

DR. L. H. ARNOLD:

Mr. President, it would have been instructive if Dr. Ames had gone one step further in speaking of that silicate cement filling.

Never has one presented in my office retaining its original polish longer than a few months, but perhaps it has been otherwise in other offices. They seem to assume a granular surface like cuttle paper and, of course, a rough filling is by no means a perfect filling. We must agree with the assayist that at present the cement filling, whether silicate or other, looks like a temporary filling.

The essayist also said that copper cement does not color the teeth, but one was removed in my office from the distal of a lower second or third molar which had carried the filling for a long time and the color of the tooth was a decided red. Another tooth in the same mouth similarly filled with copper cement showed the same reddish cast.

As to cements shrinking or expanding during crystallization, a very simple experiment will settle that beyond all cavil. Mix any one of the cements as for ordinary use and smear it rather thinly over the cement slab and allow it to remain there for a few hours and note what is to be seen. It has been my experience that not one will stay where it was put.

Flat spatulæ have been pretty generally condemned tonight, but no other has been used in my office for several years because they are more readily cleaned than others and by elevating the leading edge a little as the instrument is swept back and forth over the slab the particles of powder will be as thoroughly turned down and mixed as with any other shape of spatula.

Crystallization of the acid around the neck of the bottle may be avoided and economy in acid promoted by the use of an acid container which has recently come into the supply houses called a "Gooseneck" which will surely meet with very general approval.

DR. AMES:

Might I add a word in regard to Dr. Poundstone's remark? I think what Dr. Poundstone meant to say was that oxyphosphate of copper will not stain the teeth beyond the point of semi-decalcification, affected by caries. A vital tooth will not stain beyond the zone of decalcification.

DR. P. G. PUTERBAUGH:

Mr. President, I would like to ask Dr. Poundstone a question. In the setting of gold inlays many of us begin polishing the inlays as soon as they are put into place and before the cement is set. This results in the heating of the inlay and the apparent quickening of the setting of the cement. I should like to know the effect of this on the crystallization.

DR. H. C. PEISCH:

I should like to know the effect of an agate spatula on the cement.

DR. POUNDSTONE, in closing the discussion, said:

In regard to the glass slab and the difference of opinion that seemed to arise between the thin window glass and the heavier slabs that would depend perhaps on the way those were held in the mixing. I never hold a slab in my hand when mixing cement. I always leave it on the cabinet and I find no difference in the temperature other than you have in the larger slab. I presume the heat of the hand would change the temperature. Slabs could just as well be made of heavy plate glass, but a large number of them is convenient simply because it is a little unhandy to stop and clean a slab when you are ready to use it. Acid in water cleans them very well, as the water alone is not always sufficient.

The German silver spatula that I spoke of is an oval spatula, it is not flat, and is the same shape as the one of bone or agate that was spoken of. It is rounded and I believe there is some advantage, as you can mix a little handier with the spatula in one direction than turning to the other. You can get about three times as many movements on the cement and time is valuable in these cases.

Dr. Ames made a suggestion in regard to the liquid. Dr. Ames is always very modest about the Ames products. I wish to speak of Ames "D" liquid when you are using the cement. There is a wonderful advantage in it. Don't use "D" liquid entirely, but simply slow down the work just as much as the work in hand demands.

You can set a piece of work with much thicker cement than you feel would be possible with the unmixed liquids.

In regard to copper discoloring I do not believe that copper cement will discolor a sound tooth materially. A tooth from which the pulp has been removed will change to a gray color to some extent no matter what you put in. The red color I would hardly believe comes from the cement. Copper amalgam and copper cement are two entirely different things.

About the polishing of the gold inlay very soon after it is set, the heat generated, I think, would be an advantage if anything. I do not think it would be a disadvantage. Heat is an advantage in all of the silicate cements, and I think the amount of heat that would be generated, unless you are going at it with coarse discs, would not affect it. The coarse disc work should be done before it goes into the tooth. The agate spatula, it seems to me, would be an advantage in mixing the cement. It would not discolor the cement. It might not be quite as handy because it is made a little heavier, but it certainly would not be a disadvantage in any of the cements, whether it be oxyphosphates or the silicates.

DR. REID:

I would like to have Dr. Ames' opinion on the question of polishing the inlays too soon after they are set. Some manufacturers say they can be injured by polishing too soon after they are set.

DR. AMES:

If anybody should ask me about this I would beg the question and say by all means have the inlay polished before setting. Unless that inlay locks into place in a very definite way you would better wait a little while. It is possible that it will disturb the crystallization. Be cautious about grinding with a coarse stone. I would not rotate a coarse stone or disc on an inlay. You can set crowns or bridges with gutta percha, and any time you want to take them off all you have to do is to heat them up by buffing and take it off. It has been advocated that if silicious cements are heated to hasten the setting, we will have fewer dead pulps, but some manufacturers say don't do it. I say that any heat the patient would stand for is not going to damage silicious cements.

THE PRESIDENT:

I should like to ask about the glaze of silicate cement. Have you seen silicate cements that have been placed in the teeth any time that have retained the glaze?

DR. AMES:

I have seen fillings take on a glossy surface instead of wearing rough. If a filling does that and if you place a piece of soft wax and have the patient bite on it and the tooth comes as near cutting a hole in that wax as any other tooth, it shows there has not been much wear. If any of you have never seen a silicious cement that did not wear rough you have something in store for you.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held November 12, 1912, at the residence of the President, Dr. J. G. Reid.

President Reid delivered the annual address, his subject being "Amputation of Roots of Teeth."

DISCUSSION.

DR. C. W. COOK:

Gentlemen, I know you are interested in this paper, but I didn't know that Dr. Reid was a surgeon before, though I have heard him talking about the amputation of roots. I have found out now that he has had failures, the first man I have heard report failures. I am reminded of a physician who was asked if he had had any great success with the use of antitoxin for diphtheria. He said he had had 100% success; he had one case and cured it. It may be the same with Dr. Reid's failures.

There are many failures in partial root amputations for the very reason stated in the paper; that the physiological processes cannot be re-established to the extent that will take care of the tissue that is always susceptible and the irritation that is produced by occlusion is, to my mind, a great factor in connection with that susceptible tissue. Any movement of the teeth means more or less danger, and in Dr. Reid's discussion of this subject I think he has not dwelt sufficiently on some of the reasons why he had failures. The percentage of operations is an important factor and should be considered in the general prognosis of the case. When we have had an infection of the tissue of any consequence we know that that tissue is not left with any degree of resistance. We know also that the movement that is liable to take place because of the loss of that root end is another important factor, and I think if we consider all the points, the occlusion of the teeth, the extent of the

disease that has been going on, and the extent to which it has recovered immediately after the operation, we will find that those are the real determining factors as to whether we shall amputate a root or leave the tooth intact.

DR. J. E. HINKINS:

Mr. Chairman, I am no surgeon, but while on the way home from the last meeting Dr. Reid asked me what had been my degree of success or failure with partial amputations. I told him I did not know, but since that time I have gone over my books and I find I have had about ten cases of partial amputations. Every one of the cases proved a failure inside of four years, and the teeth had to be removed. I might say like a prominent physician in this city that the operation itself was a success but the results were different. After the operation was performed I followed about the same line of treatment as Dr. Reid outlined. I do not take very much stock in the amputation of single rooted teeth. The operations on the multiple rooted teeth have been very successful. The teeth stood very well, but as to the conditions after the operation, I do not believe we know one-tenth as much as we think we do about the physiology and pathology. In going over the literature for the last ten or fifteen years, I find that the aim is to isolate the germs. The work of the last few years of the leading bacteriologists and entomologists goes to show that we are working at the wrong end of the string. There are millions of microorganisms and when we isolate one organism we are taking it entirely out of its function because one depends on the other. I do not believe we will know very much about the decay of the teeth until we get a more enlightened knowledge of bacteria than we have today.

DR. TRUMAN W. BROPHY:

Dr. Reid's paper is the result of the experience of his fellows together with information he has acquired by close observation of his own cases.

I remember, previous to an occasion several years ago when I was expected to read a paper, I began putting the question: "What one thing does the dental profession most stand in need of?" I succeeded in getting information which I quoted freely. They were kind enough to say I presented a good paper, but it was composed of liberal quotations of what they themselves had said.

Dr. Reid's subject tonight is one to which I have given a great

deal of thought. The reason we are called upon for this operation is to cure a condition that is not amenable to successful treatment by medication. A case of chronic dento-alveolar abscess which does not heal by ordinary medication—by the injecting of fluids into the pulp canal to flood the abscess cavity and escape through the sinus onto the mucous membrane of the gum may be regarded as an abscess with complications.

If it does not heal in a reasonable time, we have carious destruction of some of the bone tissue surrounding it. I just happen



to have in my pocket a little skiagraph which came from a member of the profession in New England who wanted some advice.

He described the case as that of a patient with an abscess of the right lateral incisor tooth. He could not cure it and finally extracted the tooth. Then he used the central incisor and attached a lateral to it. To his regret the sinus continued to discharge. He did not know what the next step should be, but he thought he would better remove the central incisor to which the bar was attached, and thought possibly the patient would soon be well.

If an opening had been made through the alveolar process and the root end cut off and all the carious tissue thoroughly removed and the cavity kept clean, he would have two teeth there now instead of one.

(Since this discussion I operated in New York and removed the end of the root of the central tooth, together with the carious bone.)

In treating and curing such chronic complicated dento-alveolar abscesses, I have had patients whose teeth have lasted many years after the ends of the roots have been removed.

The essayist did not say how this should be done. Long ago I made up my mind that opening in through the soft parts and exposing the ends of the roots is an unwise course to pursue. We must not leave a pocket there. The abscess cavity should be kept wide open for the successful formation of granulations and the curing of the abscess.

This little drawing shows a funnel shape into the root. We have cut away the bone in order to get into the abscess cavity and to expose the root and to make the cavity self-cleansing. Granulations fill in the base of the cavity and by and by the whole cavity fills up.

The principal thing for the diagnostician is to determine the character and extent of the disease and the best means at our command to do this is the skiagraph. We may use probes and investigate by digital manipulations, but best and most reliable of all is a good skiagraph.

One lesson to be learned from this skiagraph is that the loss of the teeth did not cure the disease. The bone became diseased and to remove the tooth would be a good deal like removing the leg in the bone of which there was an osteo-myelitis.

DR. C. N. JOHNSON:

Mr. Chairman, I cannot throw very much light on this subject, but I am hardly as pessimistic in regard to it as the essayist. This subject has not been discussed in recent years in our societies and I cannot say that I have anything new in regard to the performance of the operation, but I do feel that in cases where I have done this work that I have been a little more successful than those cases reported by the essayist and by Dr. Hinkins. It sometimes leaves a little depression which I do not like to see, but in the large percentage of cases the sinus is closed.

There is one point that we should give a little more consideration than we do. We go on blindly without an intelligent idea of what is going to take place after we have amputated the root. It is inevitable that the tissue will not heal over the exposed dentin unless something takes place to cover the dentin. I am not sure but in some instances there is a re-deposition of the cementum of the tooth. I am speaking now of partial amputation. The most satisfactory operation that I have made of this kind has been the amputation of one of the roots of an upper molar either the disto-

buccal or in some cases the lingual root. It gives one an opportunity to clean out the root at the bifurcation. By cutting that root entirely it opens up the whole field and you can clean out the bifurcated area. I have found that the remaining roots of an upper molar will sometimes carry the tooth indefinitely.

DR. E. R. CARPENTER:

Mr. Chairman, I have had very little confidence in the partial amputation of roots because in the few cases I have had and those I have had the pleasure of observing have proved in such a short time to be failures. In the first place, it seems an unscientific and impractical method to partially amputate any root. In partial amputation you cut off the normal blood supply through the pericemental vessels and have no chance for repair to the remaining stump. If there has been congestion and disintegration of the tissue around that root, I believe radical measures are indicated. I am speaking now only of multiple roots. If that root is amputated well up into the crown and the surface polished, I think you have all had the experience of seeing the tooth stand for several years after amputation. I have several upper molars where I have amputated the lingual root and have crowned and put on inlays. I think there are as many as eight that have carried crowns and inlays and all doing service yet, but it was a complete amputation so that the surface could be kept clean.

DR. F. E. ROACH:

I do not feel that my experience in root amputation is of sufficient consequence to occupy much time. It has occurred to me, however, that one or two things are responsible for failure in this work. I have had only two or three cases in my practice and I think about 50% of my cases were failures such as Dr. Reid has referred to. I attribute the failure to faulty operation on my part in the one case, especially in not thoroughly removing all of the root from which the peridental membrane had become denuded and leaving it smooth afterwards and then not removing the diseased bone around the parts. It seems to me I have seen more of this work being done lately than for a great many years. I think possibly sufficient emphasis has not been laid upon the necessity for thoroughly removing all the diseased tissue around the root as well as the amputation of the root itself, making the end of the root thoroughly smooth. This it seems to me is necessary and is sometimes overlooked.

DR. C. S. CASE:

Mr. Chairman, I have had more or less experience in the amputation of roots many years ago, with some successes, some failures. It was quite a fad in those days, and there was one thing we pretty well understood; that it was necessary to remove all the dead portion of the root and surrounding tissue and open up the cavity so that there was produced an open surgical wound that would cleanse itself. I can recall one case in which I amputated four roots in one month—the incisor teeth. After a long treatment of the case and finding that it was impossible to cure the abscesses, I went in and could feel readily with a delicate probe that the roots were in an atrophied condition. The only thing to do in my opinion in such cases is to open up thoroughly and amputate the roots of the teeth and the surrounding dead tissue. It was quite a general practice in those days to amputate roots, and was sometimes successful and sometime a failure.

DR. EDWARD A. ROYCE:

About twenty-four years ago a man walked into my office who had taken a header on an old-fashioned bicycle and had smashed off the corner of one of his incisor teeth. Dr. Crouse had fixed it up according to his best method. The work had been beautifully done and I concluded that the root must have been attended to, nevertheless he had a real good abscess on that central. Finally I took him down to Dr. Brophy, who amputated the root of the central, taking out about one-third of it. I saw the patient about four months ago and the central was doing good service. I tried the operation a few times after that and concluded that I did not get the surrounding tissues cleaned up as they should be.

Amputation of a multiple-rooted tooth has been spoken of, and I presume I have had about the success of others. There is one thing which has not been referred to in regard to the lower teeth that has been very satisfactory to me. After amputating one of the roots of a lower molar if there is a tooth adjacent to the lost root I always put a crown on and let a little lug run over onto the other tooth to steady it. Instead of a bicuspid I have a molar tooth to do the work and it does the work very nicely and successfully.

DR. P. J. KESTER:

Mr. Chairman, I do not think I can add anything regarding this particular operation. I came into dentistry when the fad of

removing teeth and filling them and replanting them was in vogue. At the college they found out that I disliked to extract teeth, and so it fell to my lot to do a great deal of that work.

I think one of the best things that can happen to a dental society is to have a man bold enough to admit his failures. I have followed all the various fads and the amputation of roots is one of them. I have amputated a great many roots, and if I could believe that I have been successful in 50% of the cases I should feel well repaid. I am inclined to believe that one of the reasons why teeth are not saved is because of the removal of the membrane that protects them. The elements which remove foreign bodies act on the root and in time it is absorbed and carried away. The only excuse for amputating the roots lies in the fact that you may be able to save the teeth for some considerable time. I think in the majority of cases after the amputation of multiple roots the chances are that the teeth will give good service for many years. I am glad to have heard this paper because I think that Dr. Reid has perhaps erred on the wrong side. I think he is fully up to the average in his successes as successes go.

DR. J. H. WOOLLEY:

I think the doctor has always shown in his papers a soundness of thought and ability in expression. I think Dr. Brophy's remarks ought to be commended by the profession. It seems to me the fistula ought to be exposed to view to get at the cause of the disease because many times the filling has not been a success because the little fistula opening on the gum has not been explored to determine the condition of the area around the apical foramen.

I have done very little root amputation. In San Francisco the first operation I ever performed was on a Chinaman. I did not see him after the operation, but I think he died. I had another case of abscess where a rat-tail filling of gutta percha had been forced through and caused necrosis. I opened it and excised about one-third of that root. That patient died two or three years afterward with consumption.

If in the movement of teeth, secondary bone forms, why cannot a secondary bone formation occur at the end of the root providing the peridental membrane is thoroughly healed and the end of the root is excised up to the healthy portion of the peridental membrane?

This subject is of great importance and I think it is a subject worthy of the consideration of the Odontological Society because it may set some of the other members of the profession to thinking when the proceedings are reported, and it may be helpful in getting at the right data and starting from a scientific standpoint in the manner Dr. Brophy suggests to produce results that will be beneficial. I think it is worth the while of all surgeon dentists to study out this problem because if the roots are saved for some years there is just so much more helpful nutrition afforded the system.

DR. L. L. DAVIS:

On this subject of root amputations I want to say that I think the amputation of single-root teeth is a thing of the past. We all know that in the amputation of multiple-root teeth we can gain success. I have a number of them where one root has been removed and the tooth is supporting crowns and what not. I think the success I have met with where such a course was indicated has been in cases where I have not amputated but have gone in with a bore and removed all the carious bone and then with a smooth stone polished the pointed surfaces of the root that caused the irritation. That is not amputation. It is simply putting the tissues back into natural condition. I think where you cut off straight across any one of the six anterior teeth, that the percentage of success is very small. If you can expose the root and with your bore or excavator or gouge chisel go in and remove all the carious bone, then with a fine stone you have lots of room to take that point off and smooth it up. I have a number of cases of that kind that have been doing service for the last sixteen or eighteen years. I think we should simply open up on the principle Dr. Brophy has already pointed out. Get a good wide opening and go in with a bore and remove the bone involved. You can put the tooth in better condition then by smoothing it up a little bit and get better results than cutting off one-third of a single root tooth.

DR. C. S. CASE:

I think it preferable to try to save the tooth by amputation, especially if the general health of the patient is good. You can tell if the end of the root and the alveolar process are dead or alive by the touch of the instrument. As soon as you have that feeling of dead tissue you should remove it and open it up thoroughly. I believe when that is accomplished you will have a good prospect of

success in a large percentage of these cases. Our method was to thoroughly fill the roots of the teeth, using gold and forcing it as near to the apical ends as possible—the incisor teeth I am speaking of particularly—so that when they are amputated the canal openings are closed. Then if the surface of the root is polished or smoothed and the whole dead tissue is removed I think you will have success in a fair proportion of these cases.

DR. L. L. DAVIS:

I will accept Dr. Case's statement in regard to the health of the patient, but I am still of the opinion that my method is the better one of the two. In the first place, we seldom or never find the root of the tooth absolutely blunt at the end. It naturally runs to an apex. Then, again, when you cut across one-third or one-fourth of the root you have reached the lateral dentine but if you simply trim the end you have not changed the angle at all. As you smooth over the tooth, you have the dental tubules at an angle of a very few degrees from the perpendicular and they gradually plane down until they become flat again. My idea is simply rounding up surfaces instead of cutting clear across and exposing a flattened surface for the absorption to take place.

DR. J. H. WOOLLEY:

It is understood, I believe, that the root receives its nourishment through the cementum from the peridental membrane, and the end of the root from which the membrane is denuded is a dead portion of the root. If there is no cementum there, there is no circulation, consequently there would be in time a dead bone. Now, how is it going to be restored to normal condition if that bone is dead at the end of the root?

DR. L. L. DAVIS:

I think you will find in nine cases out of ten that the abscess is not in the root canal itself, but the surface of the apex is involved. When you take off the surface involved in the irritation you get down to the healthy tissue and you have not changed the angles of the dental tubules to the walls of the bony socket, and there is a better chance for healing to take place than there would be on one-third of the tooth for practically its whole length.

DR. TRUMAN BROPHY:

This little skiagraph presents, I think, exactly the point under discussion. Here we have about one-fourth of the root of this tooth denuded of the pericementum.

I don't see that the denuded root is capable of being of any further use. It does not give the tooth any support. The pericementum covers the dentine which is no longer receiving nutrition through the medium of the pulp, and so it is practically a foreign substance. All that portion of the root of the tooth between the border of the alveolar process and this carious process is surrounded by living, healthy cementum, and the cement of the tooth which it covers is still receiving nutrition. Were it not so, all teeth having dead pulps would be exfoliated by Nature.

If we want to rid the patient of all the tissue that is diseased and useless, we must remove the end of the denuded root together with all diseased bone surrounding it, and cut it down to a point where we have living, healthy cement, thus enabling us to keep the tooth in place for years to come.

DR. DAVIS:

Don't you think the cause of the abscess in the first place is dead pulp? Now, a persistent flow of pus or pressure of pus on the socket produces caries of the bone. You cannot heal the abscess simply because you have carious bone present. As soon as you have removed the carious bone, you have removed the source of the abscess, and if you simply smooth that up with a spatula or excavator that root will become a good healthy root.

DR. BROPHY:

But it is dead.

DR. DAVIS:

No, sir.

DR. BROPHY:

What keeps the cement alive?

DR. DAVIS:

As long as you remove the irritating material you have a normal condition of things.

DR. BROPHY:

You wish to have us understand that the organic matter of the cement is revived?

DR. DAVIS:

I know that fills up and gives a better result.

DR. BROPHY:

The cement at its thickest point frequently has canaliculi. When that pericementum is removed there is no way by which we

can refill the bone cells with living organic matter that I know of. If there is any way in which dead lacunae and canaliculi may be revived I do not know of it. Once the end of the root is dead, it remains dead and having died, it becomes a possible source of irritation and perhaps a source of recurrence of the disease.

DR. KESTER:

I want to question Dr. Case's use of terms. Dr. Case says the lower third of that tooth is dead. I do not believe that, because if one-third is dead, it is likely the other two-thirds is dead. I am speaking of the root as a whole. We know that Dr. Younger has taken a tooth that has been out of the mouth for years and re-implanted it, and whether the life of that tooth was restored or not, we do know that these teeth have become surprisingly adherent.

DR. WOOLLEY:

According to the best histologists there are about three million dental tubules in the normal mouth, and according to Tomes, in those tubules there are tissues. According to my belief, when the cementum is uncovered from the end of the root, the tissue or papilla is dead and no nourishment can be received by that particular portion. I believe that the papilla dies when the end of the root is exposed in the jaw and becomes disintegrated.

DR. REID (closing the discussion):

Mr. Chairman, when I presented this paper it was with the view of finding out whether I was having all the failures or whether somebody else was having some of them. I have come to the conclusion that almost everybody is having them right along. I have read of the amputation of roots ever since I have been in practice, and I have never heard of any failures. I have performed the operation a few times, but as I said, I do not pose as a surgeon in this line of work. I have amputated roots to try to prolong the life of the teeth. In the last twenty years I have amputated partially and totally twenty-seven times. That is not very many. I take it that there are men who have operated on hundreds of cases, but I have not been able to find statistics.

I did not mention anything about cleaning out the diseased bones because it is naturally supposed that when you have the conditions I have been talking about you have all the conditions in regard to the bone and the surrounding tissues and it did not seem necessary to go into that subject in detail. Ordinarily the excision

of the end of the root will remove carious tissue surrounding that root. I think I stated that if you are going to amputate the root of the tooth the most successful way is to see how much of the surface you have to amputate before you start at it. If I do not succeed in treating a tooth properly after one or two trials I look for something else, and I usually find what I am looking for.

The longest I have known a tooth to remain in the jaw after partial amputation has been four years. I believe total amputation is the most uniformly successful method, and I believe it is safer in case of a multiple root tooth to amputate the entire root. The tissues have been healed so far as any external observation is concerned. There has been no recurrence of disease or pus. When they have been removed I have found a continuation of the absorptive process. I do not know whether it is faulty technique. I have healed the trouble, but I have not saved one for any length of time. The periodontal membrane is very necessary and essential, and if you remove the periosteum what is the result? It is deprived of nutrition and dies. Nature is going to get rid of it. It is only a question of time, but ultimately it will be lost by that process. If I have saved a bad tooth for four or five years, is it a successful operation? The operation is successful for a limited time, but not long enough to make it worthy of consideration.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

THE ANNUAL CLINIC OF THE CHICAGO DENTAL SOCIETY, AND THE BROPHY BANQUET.

An event which added much to the history of dentistry in Chicago occurred January 31st and February 1st, 1913, when the Chicago Dental Society held its annual midwinter clinic and gave a complimentary banquet to Dr. T. W. Brophy. On the evening of January 31st a paper was read by the eminent surgeon, Dr. Charles H. Mayo, of Rochester, Minn., on "Constitutional Diseases Secondary to Local Infections." This brought out a very large attendance, the estimate being nearly 1,000, and they were well repaid by listening to an able paper, and to a discussion by distinguished representatives of the medical and dental professions. It was a very enjoyable and profitable evening, and added one more link to the chain which is rapidly being forged to bind together these two callings.

On Saturday the clinic was one of the most successful and varied of any which the society has ever held, and the interest was keen throughout, but the crowning glory was the banquet Saturday night. About 500 men sat at the tables in the large banquet hall of the La Salle Hotel, and the occasion was graced by the presence of many distinguished men from all over this country and Canada, and also from Europe. Notable among them were Dr. N. S. Jenkins, of Dresden, and Dr. Arrigo Piperno, of Rome—the latter coming all the way from Italy for the express purpose of doing honor to the guest of the evening. It was not alone the numbers present nor the distinguished character of the men in attendance.

but it was the general spirit of enthusiasm and good will which pervaded the entire occasion, and which made every man feel closer drawn to his fellowman. Not only this, but at one end of the banquet hall a platform was built for the accommodation of the ladies who came in to listen to the speeches. To have a banquet hall graced by the ladies is always to lend distinction and charm to the proceedings and Dr. Brophy was surely honored on this occasion by their presence. In addition to the many appreciative speeches there were messages from all parts of the world testifying to the high esteem in which the guest was held by the profession everywhere. Then came the gifts, rare, expensive, unique and overwhelming in number and variety, showered upon him, till it seemed as if the outpouring would never cease. It is seldom that such a spectacle is presented to the eyes of men, and it is safe to say that those who were fortunate to be present will never forget it.

The paper of Dr. Mayo, with its discussion, and the speeches at the Brophy banquet, will appear in due time in the pages of the DENTAL REVIEW and our readers may then judge in some degree of the significance of the occasion.

DR. WILBUR F. LITCH.

On Christmas morning, 1912, Dr. Wilbur F. Litch, late editor of *The Dental Brief*, passed away, leaving behind the memory of a brave, modest and useful life as a professional man and a teacher, and particularly as an editor of distinguished ability. Dr. Litch was one of those quiet but forceful souls who wield an influence for good far beyond their immediate ken, and the entire world of dentistry is better for his having lived to grace it. He will be missed in dental journalism, not only by his immediate associates on his own journal, but by the editors of other publications. His influence was always an uplift to humanity, and he left a legacy rich in all these essentials which make for the betterment of mankind.

His successor on *The Dental Brief* is Dr. Alfred P. Lee, and we extend to the new editor our best wishes for success and bid him a cordial welcome into the editorial ranks.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

Another Vacation Story.

(Continued from the February issue.)

THE FIJI ISLANDS.

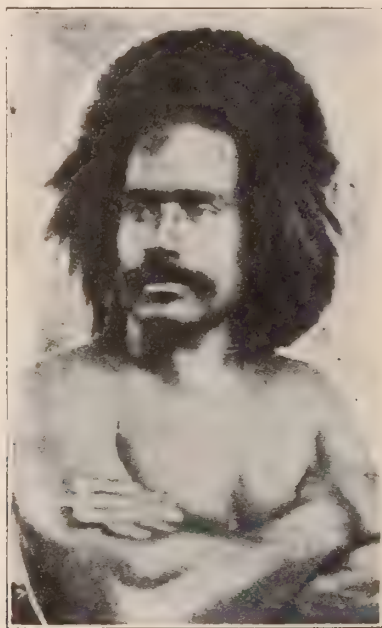
Our next stop after Honolulu was Suva, Fiji Islands. When some one asked Robert Louis Stevenson where Samoa was he said: "You go to San Francisco and then it is the second turning to the left." Fiji is the first, and by your leave I will live some place else. Even with that one turn I could never find my way there, and, what would be infinitely worse, I could never find my way back. It is eight days from Honolulu and four from Auckland, our next stop. I have concluded not to buy the Fiji Islands. There is too much of it for my purpose and not quite the quality I want. I had no idea these islands were as large as they are. There is one river, the Rewa, whose mouth is about twelve miles from Suva, and which is navigable for fifty miles. Fiji is now under British rule, and I believe has a very promising future, but there must be much construction work done yet and much elimination. When this is accomplished Fiji will be better to live in, and—less interesting. It is midwinter now in this part of the world but you would never suspect it. They said it was unusually cold the day we were there, but that word cold can not properly be mentioned in connection with Fiji. Up town the sun was extremely hot and down on the dock it was hotter. I shouldn't like to tackle Fiji in summer. The thing that made them call it cold was a delightful breeze which fanned us whenever we were on an elevation of land or on the upper deck of the ship.

We came into Suva in the morning and the sight was exceedingly beautiful—to my mind more inviting than the approach to Honolulu, and more picturesque. In fact, there is a picturesqueness about everything Fijian unequalled by anything I have ever seen, though, of course, as a place of residence there is no comparison between Honolulu and Suva.

There are wonderful business possibilities in Fiji. Suva is growing very rapidly and there seems to be material progress on all sides. Nine years ago it would not support one tailor—today there are six. But what they do, in the light of heaven, I do not know. I didn't see many clothes on people while in Suva. There

are three dentists in the place, and I called on one of them. From him I learned the most astonishing fact, quite in confidence, of course, viz., that the other two practitioners didn't amount to much. And yet with this terrible handicap upon them I would have called to see them if I had not been too busy with other things, and it had not been so boiling hot walking about the streets.

The first thing that strikes one as Suva is approached is the character of the houses. They are prettily perched on the hillside



Native of Fiji.

amidst the densest tropical foliage, and they make a beautiful appearance. There is not a chimney on a house in Suva—they do not need them. The cooking is all done in holes in the ground outside the houses.

The Fijians are lusty looking people with a wonderful growth of bushy hair standing up like fine wavy wire. Their hair is their pride, and they do all sorts of fantastic things with it, the women weaving into it garlanads of delicate ferns along with the red leaves of the hibiscus and other plants, and the men dyeing or bleaching it

with lime which turns it a reddish brown or yellow. This appears to be the height of fashion among the Fijians, just as the use of a rat and braids for decorating purposes, or rather for distortion purposes, is among the women of civilization, and I cannot help thinking that for common sense and beauty and for lack of incongruity the savages have it on the women at home. I vote for the Fiji style. I do not think they ever have their hair cut except when they are put in jail, and it is said that you can tell the period of time



Native Fijians preparing for a feast.

a Fijian has been out of jail by the length of his hair. I saw several whose hair was exceedingly short.

There are three automobiles in Suva. One was sent up from Sydney to be used as a taxicab but proved a failure, and I saw it discarded out behind a barn. The other two are American cars for private use and both are doing service. We took a carriage for a drive around the place and saw many interesting things. The roads are perfect, in some places being made of crushed coral taken from the shore and in others from a sort of sandstone.

Just as we were driving out of the village we came upon a

large party of natives preparing for a feast. One of the chiefs had lost his wife a few weeks before and this feast was either to commemorate her death and give her a good send-off, or in honor of the princess who was to be her successor. There were fruits of all kinds and many huge turtles were lying beside the road ready to be cooked for the feast. They were still alive. After we had driven through the crowd I told our driver to stop while I took a snapshot. Instantly, when I jumped out on the road and began to



In the Botanical Gardens Sava Fiji.

prepare my camera, they all hurried into line to pose for the picture and one lusty chap dragged a turtle into position to be included in the picture. I never knew people so eager to have their photographs taken as these, and we found the same thing everywhere on the island. All you had to do to claim their cordial coöperation was to get out your camera. I was told by the surgeon of the ship that there is only one other thing they like better and that is to be invited down to the dock to sing some of their native songs. Bless those people, I love them for that one thing. Our North American

Indians are just the reverse of this, and will snub the ambitious photographer on every occasion.

After leaving the feast of the passunder, we visited the botanical gardens, where we found some native prisoners working away fixing the place up, and not before it was needed. Here we saw some wonderful tropical trees and plants—the lotus lily, held in reverence by the Hindus, the eucharist lily, large and pure white,



Travelers' Palm.

used for church decoration, and many other foliage plants. Among the most interesting is that splendid plant known as the "traveler's tree," with a palm-like trunk and leaves spreading out like a fan. It has ribs six or eight feet long, each containing a natural reservoir of pure cold water which has doubtless saved the life of many a weary and thirsty traveler. The tropical odors in this garden were very alluring to us after being on board ship for more than two weeks and getting occasional and semi-occasional whiffs of steamship cooking mixed with other promiscuous smells.

There is a profusion of growth in Suva and we saw some

wonderful gardens on our drives. Probably the most striking flower was the hibiscus in all colors—red, white, violet and yellow. One astonishing thing I saw on this drive, and the only familiar object in Fiji, was a bird flying around which seemed strangely natural. It was the Swallow, and so far as I could see, it was much like the Swallow of the northern hemisphere.

Another bird, not in the least familiar, was the Minah, a bird about the size of the blue jay family. It seemed to be ever present and acted very saucily and with great impudence, also making more noise than seemed absolutely necessary. Our driver did not speak with a great deal of respect for this bird.

On one drive we went up the Waimanu road, passing the flag-staff which signals the arrival of all vessels, and on another we took a winding drive up the hillside, called the Tamavua road, and through an avenue of wonderful shade trees, and the most luxurious tropical growth on all sides. We passed the hospital and jail—the latter apparently a very necessary adjunct to the town. The government is evidently trying to suppress outlawry on the islands, and there is scarcely a session of the court when there is not a hanging. They have executed eighteen there in about as many months—six at one time. This is quite likely to make us all shudder when we think of it, and particularly when we consider the extent of crime which led to the hangings, but let us see about that. A little comparison may give us pause and make us wonder, after all, how much better we are off at home. Possibly if our laws were the same and we administered them as rigidly as they do in Fiji we would not have a much better record. In Chicago, for instance, I can imagine that if there was a hanging for every murder committed the record of executions would run much higher than in Fiji. Let us clean our own stable before we descant too piously about the savage in the South Seas. I am inclined to think that with his philosophy of life he is living up to his possibilities about as well as we are, and as for the difference in philosophy I am not so sure that he has not some basis for argument for his particular point of view.

I rather like those Fijians, great fine sturdy chaps, lithe and sinewy as a lion, and for the most part good natured. They seemed like a strong virile race and I saw no evidence of degeneracy among them. The Fijian has a free graceful swing to his walk and a majestic carriage that a king's guardsman might envy.

Their one ambition is to be soldiers, and Suva is protected by native police. The women are evidently well fed. I didn't see one who was not plump and prosperous looking—apparently living on the fat of the land. And, so far as I could make out, their complexions were perfect, the ebony hue harmonizing admirably with the general *ensemble*. To their everlasting honor let it be said that they do not try to improve on nature by powdering. They are more consistent and less hideous than some of our women at home—God bless 'em.



Native police Fiji.

In physiognomy some of the Fijians seem to us almost brutal and repulsive, while others are really beautiful. All are black, of course, but there are worse attempts at color than black, which seems to fit perfectly into the climate. But the Fijian has one fatal fault, which I fear may result in his undoing, and his possible eventual extinction. He is utterly lacking in ambition, or to put it more bluntly, he is lazy. I do not blame him—I would be lazy in that climate—but it spells deterioration for him. The introduction of civilization removes from him those wilder graces—or disgraces—which kept alive in him the spirit necessary to develop stamina, and he will inevitably go down. My first impression in this regard was wrong. When the boat landed and I saw those lusty chaps leaping about and attending to everything with such apparent alertness, I said to myself, "Surely here is a wonderful race." They

handle the freight, carry mail, run messages, and are literally everywhere. I remarked this to the ship's surgeon. He smiled and said: "Yes, Doctor, they look alert now, but watch them toward afternoon and you will see them lag. They may work a day or so when a boat is in port but that is the extent of it for another month. They all have the disease—they were born tired." One writer has said: "No Islander of the Pacific will work as a white man requires him, if he be in a position to leave by the simple effort of running away. He does not regard work as the chief end of man."

And yet there are some Islanders who are more businesslike than the Fijians. The Solomon Islanders, for instance—coming from a group farther west—are much more industrious and have many commendable traits. They are smaller than the Fijians and intensely black—the blackest Blacks I have ever seen. Such men as these, with their aggressiveness and willingness to work (I speak, of course, in a relative sense), will develop, while the Fijian will deteriorate. It is inevitable the world over—those who are actively engaged in the pursuits of life and who are alert will grow while the laggards will degenerate.

Then there are groups of Samoans in Fiji, a lighter colored people than the Fijians, big, brawny, and some of them very beautiful. The men look as if they would make good soldiers but their chief occupation is to take in washing.

Probably the largest group of people in Fiji, outside the native population, are the Hindus—or as the people there call them, the "Indians." They are not in the least like our North American Indian, either in physiognomy or characteristics. They are small in stature, slender and delicate in build, and yellowish-brown in color. Their eyes are black, very keen and bright, their features sharp, and they dress most fantastically. The men wear white tunics and an ornamental head dress of various forms, from a small beaded cap to an immense turban, wound in a most wondrous fashion. The women pierce their noses and wear metal rosettes on one side or an immense metal pendant hanging from the nose over the mouth, sometimes both. When I saw that thing dangling I asked our driver how they ate or drank, and he said they lifted the pendant or at times removed it during a meal. Then they wear a profusion of metal bracelets, rings and anklets, and I saw some

of them with a ring on every toe. I was told that they would take coins of all kinds, gold or silver, and mutilate them for jewelry, and I heard of one woman who wore nearly one thousand dollars worth of gold sovereigns in various forms of jewelry. This all struck me as being the most grotesque thing in the world till I stopped and thought a moment. After I had duly considered the matter I recalled a most peculiar coincidence. Back home where I live I had a dim recollection of some of the women piercing their ears to wear earrings, and if the ears why not the nose? Nose rings make a bigger display than earrings, and display is assuredly the object of this kind of ornamentation. So, after all, the Hindu women are one ahead. Then I remembered that rings are worn on the fingers of white women—I had paid for some myself—and if the fingers, why not the toes? The only reason, to my mind, is purely climatic. In our climate the women are obliged to cover their feet with shoes, and so cannot display jewelry on their toes. As the only object of wearing jewelry is to show it—there you are. After all, it is only a question of the point of view.

The chief occupation of the Indian Coolies, so far as I could see, was cultivating the soil and raising rice, bananas, etc. There are about 35,000 of these Hindus in Fiji as against a native population of Blacks of approximately 135,000. I don't know how many whites there are, but not a very large per cent. C. N. J.

(To be continued.)

OBITUARY.

DR. T. W. PRITCHETT.

As announced briefly in our February issue, Dr. Pritchett died at his home, White Hall, Illinois, on January 20th, 1913. He was born May 7th, 1841, at Apple Creek Prairie, two and one-half miles from White Hall. In 1862 he enlisted in Company G, 91st Illinois volunteer infantry, and remained with the regiment till the close of the war. He then studied dentistry with Dr. James Ball, of Centerville, Indiana, and in 1867 he located in St. Louis. In 1869 he returned to White Hall and remained there the rest of his life. He became a member of the Illinois State Dental Society in 1877, and was its president in 1890. In 1901 he was appointed on the State Board of Dental Examiners, and served most faithfully, till ill health caused him to resign in 1912.

Dr. Pritchett was one of those rare characters who stamp their

individuality upon their fellows wherever they may live. Among a body of men distinguished for their ability and unique in the history of state organizations, he always stood as a commanding figure, conspicuous for his many excellent qualities of mind and heart, and genuine to the core. He will be missed by the older men



DR. T. W. PRITCHETT.

in the state society, and by the younger men as well. He was essentially and always a friend of the young man, and many a practitioner of Illinois will recall the kindly counsel and fatherly advice received from Dr. Pritchett on his entrance into practice through the medium of the State Board. The deeds of good men live after them, and Dr. Pritchett will be remembered as long as dentistry has a history in Illinois.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 810 Masonic Temple, Chicago, Ill.)

A Useful Article:—Keep salt, borax, and saltpeter in small round bottles such as used for Sal Hepatica samples. Perforate the removable top.—*E. B., Chicago.*

Removing a Post from Root:—In removing a post from a root with a post puller, cut a piece of German silver to go over end of root, puncture, allow post to pass through and then remove the post. This eliminates the possibility of splitting the root in case the end should be uneven.—*E. T. Tinker, D. D. S., Minneapolis.*

In Burnishing Platinum Matrices:—In burnishing a matrix for a porcelain inlay cavity when it is difficult to prevent the platinum from shifting, burnish one part thoroughly and force slightly warmed temporary stopping into that part of the cavity. This holds the matrix firmly in place and permits the completion of the burnishing without any distortion.—*Elmer S. Best, D. D. S., Minneapolis.*

A Valuable Method for Restoring Root:—A much more serviceable result is obtained in placing a telescope crown on a badly broken-down tooth by dressing down the remainder of the crown to the required shape and then restoring the portion lost by decay, by means of a cast metal (Silver, Acolite, or Weston's metal) inlay, anchoring this securely by threaded I. P. wire posts in the root canals.—*O. De Forest Davis, D. D. S., Minneapolis.*

To Polish Gold Shell Crowns:—Many crowns are bent out of shape in polishing because they cannot be held firm. Sticks are being cut out to hold them, but I take an ordinary clothspin, pressing the two beaks together slipping on the crown. The beaks are convex, and conform with the walls of the crown, and serve as an excellent holder. One may have to sharpen beaks to fit smaller

crowns.—*Fred E. Schwartz, Student Northwestern University Dental School, Chicago.*

Coating of Plaster Casts:—

Rx. Sulphuric etherOz IV.
 CollodiumOz II.
 Silver glassOz. II.

Mix Sig:—Use as a coating to plaster casts. The silver glass may be obtained from dealers in painters' supplies. Keep the solution well corked and allow it to stand forty-eight hours before using and apply with camel's hair brush, giving your model a nice white glossy surface.—*R. I. Lewis, D. D. S., Chicago.*

Non-Cohesive Gold:—*E. T. Darby* states that cohesive foil is made non-cohesive by exposing it to the influence of ammonia gas—also that it is prepared by a thin film of iron being deposited upon the surface of the leaf, basing this supposition upon the fact that when melted non-cohesive foil shows a reddish brown tint, while cohesive foil remains bright. Two layers of cohesive foil made non-cohesive by any of these methods may be rubbed together without adhering, and it is this non-adhering or "slipping" property that we must have to insure the desired working quality if it is to be inserted in the cavity by the wedging principle.—*Dr. E. P. Dameron, St. Louis.*

Amalgam and Cement:—In proximal cavities involving the occlusal surface or those cavities where matrices are necessary. I find that it is good practice in such cases to apply enough cement to cover cavity walls and then push amalgam into cavity with a medium sized plugger point, using just enough amalgam to force out all excess cement. After removing all excess cement from cavity margins then apply matrix. If matrix is applied before beginning operation, then the angles formed by matrix and cavity walls will contain excess cement which would be poor practice.

I find also that the cement aids greatly in supporting frail cavity walls. I think the proper name for this sort of filling would be "amalgam inlay."—*Dr. G. M. Hiner, Jeffersonville, Ohio.*

Gold Crowns:—For second and third molars and even first

molars, when the presence of gold is not objectionable—the cast gold crown affords results far in advance of anything heretofore obtained. In the construction of gold crowns by the casting process, however, the fit or peripheral adaptation is, because of the spreading tendency of wax, *always best obtained* by previously fitting some form of band to the root and then casting directly to it.

Whenever it is desirable to exaggerate the contour, a narrow band of platinum or 22 karat gold, of about 30 or 32 gauge, should first be made to fit snugly around the entire periphery and then trimmed to evenly approximate the end of the root, after which all of the contouring may be done in wax, which can be best done, perhaps on a model.

When an exaggerated contour is not required, however, and it seldom is, the band may be made of 28 gauge, 22 karat gold, and fitted and contoured in the usual manner. When in position on the root, casting wax is then moulded to the end of the root inside of the band, and this procedure followed by an imprint in the wax of the opposing teeth in all of the movements of mastication.

After the band has been removed, its interior should be filled at once with casting investment material, and the occlusal surface properly carved, after which it may be invested and cast, using for the casting the same grade of gold of which the band was made.
—Hart J. Goslee, D. D. S., Chicago, Ill.

Mastication:—It is in the mouth that the first and the most important step in digestion takes place. Over this step we have every control. This emphasizes the importance of a good set of teeth and a clean mouth synonymous of perfect mastication. Thorough mastication of food, right living and due regard to health rules must ever be the basis on which the physical welfare of people depends.

Perfect nutrition means thorough mastication of our food; those whose teeth are not in good condition should consult a dentist to repair the damage caused to these organs and to replace the missing ones, as it is better to have artificial teeth than none.

When food is thoroughly masticated a smaller intake is sufficient, assimilation is easier and vital energy economized. It requires indeed vital force to digest unnecessary food and when not digested

it ferments, poisons the body and causes all sorts of organic troubles from excess of imperfectly digested food. This is what makes a person sick or tired by auto-intoxication, as no one should be tired unless one is sleepy.

The longer food is worked in the mouth the shorter time it remains in the stomach and intestines and when properly masticated about 95 per cent of the nutritive substances are utilized.

The powers of endurance are considerably enhanced by thorough mastication and insalivation. Young folks with proper diet have good teeth, a normal development of the face and good general health.—*Geo. A. Roussel, D. D. S., Paris.*

MEMORANDA.

ST. LOUIS UNIVERSITY, SCHOOL OF DENTISTRY.

The midwinter commencement exercises were held January 30, 1913, when the degree of Doctor of Dental Surgery was conferred on the following: Sylvester Baker, Louis James Dicks, Charlie Gilliland, Nicholas Theodore Hoxmeier, Harry Mathias Stamm, George James Vandas.

KENTUCKY STATE DENTAL ASSOCIATION.

The forty-fourth annual meeting of the Kentucky State Dental Association will be held at the Phoenix Hotel in Lexington, Ky., on May 26, 27 and 28, 1913. All ethical dentists are invited to attend.—C. R. Shacklette, secretary.

TEXAS STATE DENTAL ASSOCIATION.

The thirty-third annual meeting of the Texas State Dental Association will be held at Temple, Tex., May 15, 16, 17, 1913. The clinics will be in charge of Dr. J. O. Hall, Waco, Tex., who will furnish any information relative to same. Exhibitors desiring space will please address Dr. J. M. Murphy, Temple, Tex. All ethical members of the profession are cordially invited to attend this meeting. Any other information will be cheerfully furnished by the secretary, J. G. Fife, Dallas, Tex.

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, APRIL, 1913.

No. 4

CONSTITUTIONAL DISEASES SECONDARY TO LOCAL INFECTIONS.*

BY C. H. MAYO, M. D., ROCHESTER, MINN.

DR. ARTHUR D. BLACK, OF CHICAGO, INTRODUCING
DR. MAYO.

[I do not wish to anticipate anything which may be said by those who are to speak tonight, further than may be necessary to state the reasons why those in charge of the arrangements for this meeting chose the subject for the evening and the man who is to present it.

It has long been recognized by the physician that local foci of infection were related to more serious remote lesions, although the relationship has in many ways been made more definite and clear in recent years. It seems, however, that few have realized the important role which mouth infections play as causative factors of lesions elsewhere in the body. This situation is doubtless one of the far reaching results of the development of the dental profession separate from the medical. On account of this separation, there has been a lack of association of causes and results, not only by physicians and dentists, but by patients as well, and there have been considerable difficulties in gaining information which would link the two together.

It is recognized that dentist, physician and patient have heretofore paid little attention to the pyorrhea pocket and the chronic alveolar abscess in the above connection. The progress of these lesions is so insidious that they have been regarded as of little consequence. Probably fully one-third of all adults have pockets, either in the maxillary bones or soft tissues adjacent to the roots of teeth, in which pus is formed constantly or at frequent intervals, and if it is a fact that even a small percentage of such cases lead to serious lesions elsewhere, then a decided change must come in the attitude of the medical profession toward such foci and radical changes must be made in dental practice to eliminate them. I am glad to state that our dental schools have gradually added more and more to general medicine, and are today giving many courses which closely parallel those of the best medical schools.

It was therefore thought desirable to bring together as many as possible of the members of the medical and dental professions to the end that both may have a better understanding and work in greater harmony for the benefit of those whom we serve.

We knew of no more certain way to have a large gathering here tonight and to have the subject presented in a masterly way than to invite as the essayist of the evening a master man in this field of endeavor.

On behalf of the Chicago Dental Society, I wish to say that we very much appreciate the sacrifice made by the essayist in coming here; we welcome him most heartily. I take pleasure in introducing Dr. Charles H. Mayo.]

*Read before the Chicago Dental Society, January 31, 1913.

The present period will live in history as the age of science. Life is the law of the universe and represents the mysterious forces which perpetuate the species, the study of which forces leads one to an adequate conception of the meaning of life as applied to the existence of the human race.

The lowest forms of life, or unicellular organisms, increase by division only and thus live on indefinitely. Each division or half cell becomes complete and continues to carry on the process. By breaking up into granules these cells may appear to die, but the granules are frequently spores which live on until, in their proper environment, they again develop cell-form and the process of division goes on as before. Such life is not terminated naturally, though it may be destroyed.

Death entered the world as the termination of a higher type of life of the multicellular organisms. In this form the continuance of the process is carried on by certain germ cells which have a definite function and are set aside for this purpose. The life of this higher organism comes to an end naturally through an exhaustion of the processes of nutrition, excretion, etc. The circulatory, respiratory and, to a lesser degree, the nervous systems, the automatic control of which lies in the glands of internal secretion, are each necessary for the maintenance of such an organism, but each in turn may be destroyed, thus bringing about dissolution of the whole.

The multicellular organism is both a unit and a compound of many tissues, any of the special groups of which may be deranged in function or destroyed with varying effect on the whole, according to their respective values. The somatic death of the whole organism through cessation of the vital functions is not necessarily followed by the immediate death of the various cells composing them. For example, the cells may live on in skin, nerves, etc., which have been transplanted from a dead member or a dead body, as is demonstrated in surgery of the present day.

The body may be looked upon as an intricate machine, the glands of which exist for the purpose of nutrition, defense or elimination, their function being manifest through the action of their hormones or chemical messengers which are delivered into the blood for action, the natural association of all being completed by their connection with the sympathetic nervous system.

At birth the child's intestinal tract is free from bacteria, but

within a few days the digestive system is invaded by them and remains so throughout life. In an examination of the intestinal secretions of 1,000 individuals with gastro-intestinal symptoms by Sanford during the year 1912 about 10 per cent showed Protozoa in addition to the usual intestinal bacteria. Only about half of these, however, are known to be causative factors in the production of disease.

From the time of birth, then, and even before animal life continues alone, its destruction is prevented only through maintaining a vigorous conflict against bacteria and Protozoa. Man is subject to the constant attacks of diplococci, streptococci, staphylococci, the various groups of bacilli and many varieties of Protozoa and insect parasites. Such battles royal against an invading army present fields of destruction quite as devastating to the tissues and elements in the blood of the host as are those of the wars of nations. This destructive invasion changes the arteries, the function of the heart, kidneys, etc., and finally, after making life uncomfortable, brings on a premature old age, due to an exhaustion of nutritive supplies, to a weakening and devitalizing of defenses, until the army of phagocytes retire defeated by death, the conqueror of all things.

It is difficult to understand why such destroying agents or even the annoying ones should have a place in the economy of the universe. However, were it not for such agents life might be continued so long as to be valueless and necessitate termination by the public executioner.

So much is said concerning the activities of deleterious bacteria that we almost forget the fact that they are but few in number as compared with the enormous group engaged in useful occupations. Through fermentation some of these bacteria develop agents useful for art as well as science. Others split up inert and dead tissues into their original elements, that they may again become useful. Much of our plant life and agricultural processes could not go on without the nitrogen-forming varieties of bacteria. We are unfamiliar with many of these life-giving processes; some are said to be harmless and we may later find them useful as well. Moreover, the further we investigate these agents which appear bent on the destruction of our peace and happiness, the more do we come to believe that the diseases they inflict are preventable and under the control of individuals through attention to cleanliness, hygienic laws,

etc. Were it not for the presence of bacteria, care of our food and our bodies would be unnecessary. Thus, they have their place in the evolution and advancement of civilization.

With our present absolute knowledge of the specific organisms of so many diseases, is it too much to suppose that all diseases may have a specific cause? Possibly this may be true with the exception of congenital defects, injuries, chemical irritants and neoplasms. The latter may still be brought into this class as caused by infective agents.

The study of these minute forms of vegetable and animal life is most fascinating and one which is pursued by scientists the world over. The mass of knowledge which has been accumulated is bewildering and, since fame is so closely associated with the discovery of new species, it requires the constant attention of the student to determine whether these announced discoveries are of a new species or but a mere variation in type.

Great progress was made in our knowledge and understanding of disease when Virchow published his work on the study of cellular pathology which marked a distinct epoch in the history of medicine and focused our attention on the cell instead of the organ.

Diseases due to derangement in the function of various organs of the body have been termed autointoxications, e. g., thyroid intoxication. In considering the diseases due to infection other than the well known infective fevers, the word autointoxication has been quite generally, though wrongly, used to interpret symptoms supposed to be due to the absorption of toxins produced by local septic processes. While such toxic absorption plays a part in the production of disease, it is true that in most diseases due to infection the living bacteria pass into the blood and through their activities and death cause irritation and fermentation in the blood itself. Some of the bacilli act as parasites on the blood cells. They may be carried in clumps causing septic infarcts in the periphery of the lung, especially when the gastrointestinal mucosa is involved. From the septic tonsil such deposits may be made in the bones, causing osteomyelitis.

It is only recently that we have begun to appreciate how common is the direct contamination of the blood by living organisms. Formerly only the more serious conditions of pyaemia and septicaemia were recognized as caused by living bacteria in the blood.

Such general infections are now known to be a source of disease and the blood may contain many living bacteria, such as pneumococci, streptococci and staphylococci and various bacilli. Bacteria in the blood may produce either very great or very little effect as externally manifested.

The portals of entry of pyogenic micro-organisms into the body are numerous. While it is possible to gain entrance through wounds and abrasions of the skin and mucous membranes, it is apparently possible for some varieties to affect uninjured surfaces as well.

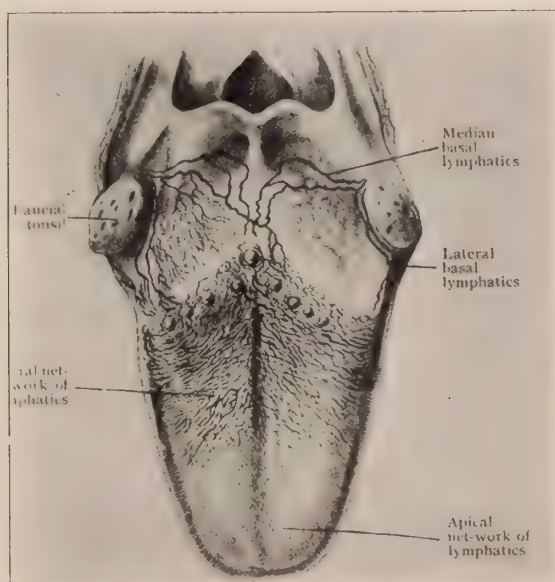


Fig. 1. Lymphatics of Dorsum and Margins of Tongue (From Küttner).

Garre applied a small poultice of the staphylococci to the healthy skin of his arm and produced a carbuncle.

Bacteria may enter the common bile duct from the intestine, more frequently they pass the intestinal wall and appear in the portal circulation. The urethra has its special bacterial flora and the genito-urinary tract may also be invaded by the intestinal bacteria. The nasal cavity has its special group, though, unless the mucous membrane be diseased, this cavity acts as a vacuum cleaner on the air-borne germs. The major portion of pyogenic micro-

organisms affecting the body must then enter the mouth. The tonsils with numerous open crypts drain into large lymph channels and while they are defended by numerous police in the form of wandering leucocytes these defenders, because of other demands or general temporary depression, may be off duty at a critical moment. Figs. 1-2-3-4.

In the mouth we find that the teeth are subject to infective destruction frequently under pressure. Root abscesses are developed



Fig. 2. Lymphatics of Tongue (From Poirier).

from diseased pulps of teeth. These frequently give no symptoms and often are not suspected until their presence is revealed by the X-ray during an attempt to locate some obscure local infection. Fig. 5.

That scourge of the human race, pyorrhea, accounts for an enormous amount of blood infection. In a recent paper Hartzeli describes pyorrhea as inflammation of the margin of the gum with destruction of the underlying bone. He discusses at length the work of Talbot and the early history of the disease before the period in which Dr. Riggs' name was associated with it through his efforts

to overcome the infection. The recent advances in the study of pyorrhea show that 80 per cent of these cases can be healed by treatment and that most of the others can be held in check by continued treatment. In some cases removal of the teeth is necessary to accomplish a cure. Removing the teeth prevents harboring certain bacteria, thus removing a focus of infection.

Smithies has recently made a routine examination of the mouth, teeth, tonsils and saliva of 318 patients who presented themselves



Fig. 3. Retro-pharyngeal Glands (From Piersols' Anatomy).

in our clinic for test-meal examination because of gastric disturbances. Similar examinations were made, as controls, of the mouths of sixteen other persons selected from laboratory assistants, nurses and physicians.

Of the 334 individuals examined but one-fourth of the number were found to have good teeth, while more than one-half of them had inferior or diseased teeth. Two hundred and one (60 per cent) showed erosions of the teeth, gum margins or a definite pyorrhea alveolaris. Fig. 6. Twenty-seven per cent of the cases in which the tonsils and nasopharynx were examined showed enlargements, crypts, exudate or erosion of the tonsils, 19 per cent gave evidence of nasopharyngeal inflammation and in 3 per cent there were ulcerative conditions of the oral mucosa apart from adenoid hypertrophy or pyorrhea.

The chemical examination of the saliva showed the presence

of an enzyme similar to that found in the stomach which causes the cleavage of the dipetid glycytryptophan in a large majority of the specimens. It was noted, however, that the amount of this

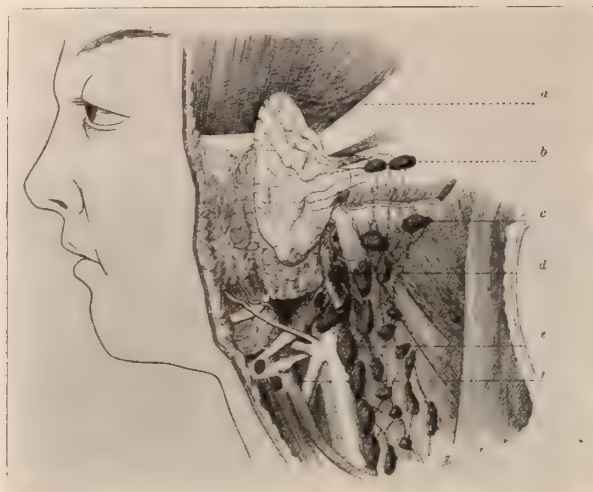


Fig. 4. Deep Cervical Chain (From Piersols' Anatomy).

enzyme seemed to be greatest in those patients having the most infected mouths. It was also shown that cultures of bacteria grown from salivas, when added to salivas in which the enzyme had been



Fig. 5. Mandible with the Cortical Portion of Bone Removed From the Body

destroyed by heating to 100 C rendered such salivas again capable of splitting the dipeptid. These experiments seemed to furnish evidence first that a large proportion of patients with stomach trouble have infected oral cavities and, second, that this infection is

in direct relation to the formation of a peptid-splitting enzyme in the saliva.

Those suffering from diabetes and rickets and women having repeated pregnancies are especially prone to pyorrhea. It will also be found prevalent in individuals during epidemics and in pet animals or those in confinement.

We must, therefore, look upon the disease from a wide point of view. A number of bacteria are found normally in the mouth; neglect and disease may greatly increase them. Matzuschita found



Fig. 6. Advanced Pyorrhea Alveolaris (From Hartzell).

sixty different varieties of these bacteria and Miller found twenty-nine varieties. Professor Black, who is so often credited with giving the first as well as the last word in dentistry, believes that the common varieties which are to be considered in diseased conditions, some of which are constant; but many varying in number, amount to about one-fourth the highest figure. He also believes that the deposits of tartar, which favor the development of bacteria, are often caused by overfeeding and over-nutrition. Foul odors are caused by the indolforming group, sweet odors by the yeasts.

Hale White, Osler, Billings and many other noted internists have written on the subject of systemic diseases arising from infections of the mouth. Looked at from every standpoint, the mouth may be said to be the greatest portal of entry for pyogenic organisms. Many species and varieties find a foothold in the tonsils, lymphoid tissue of the pharynx and about diseased teeth and gums.

There are three modes of bacterial distribution—first, by continuity of tissue, as in the eye, ear and sinuses; second, by ingestion by way of the stomach; third, by direct entrance of tissues and lymph channels.

Microscopic examination of gastric extracts made by Smithies from 2,406 different individuals with "stomach complaint" (dyspepsia, indigestion and the like) showed that irrespective of the degree of acidity of such gastric extracts, bacteria were present in 87 per cent. Morphologically cocci and diplococci were present in 83 per cent—short and long rods (often of the colon group) in 58 per cent—typical streptococci and staphylococci in 17 per cent and *Leptothrix buccalis* in 24 per cent. In fifty-four cultural studies of saliva from "dyspeptic" patients, streptococci and staphylococci were demonstrated in over 80 per cent, bacilli in 66 per cent and *Leptothrix buccalis* in more than 14 per cent. Comparing these figures it would appear that the common forms of pus-producing organisms (streptococci and staphylococci) have their proliferation retarded in gastric juice, but that bacilli (often of the colon group) as well as *Leptothrix buccalis* thrive in the stomach.

Klynack has called attention to the association of tonsilitis with appendicitis. Poynton and Paine report a case of appendicitis, which, upon removal, gave a pure culture of the same strain as that cultivated from a diseased tonsil removed at the same time. These streptodiplococci were injected into rabbits, causing arthritis, and the fluid removed from the arthritis again gave a pure culture. It is often noted that serious diseases of the tonsil cause few or no local symptoms.

Endocarditis is an infectious disease, producing vegetations and ulcerations on the valves of the heart and injury of some of the larger vessels. This infection is carried to the circulation most frequently from the infected tonsil. Rosenow has shown that the bacteria are of a low grade of virulence, but tenacious of life. After repeated passage from animal to animal these cocci resemble pneu-

mococci. By using strains cultured from the blood of such cases and also from the tonsils in the same group, inoculating into the veins of rabbits' ears he could within forty-eight hours show lesions of the heart valves in more than one-half the cases, while others showed lesions from infected emboli in the lungs, kidneys, etc.

Wadsworth found that in order to produce pneumonia in rabbits with pneumococci it was necessary to have a properly balanced relation between their virulence and the resistance of the host. This is true of the human variety also, as the pneumococcus may be found in the mouths of about one-third of us.

Rosenow found positive blood cultures of pneumococcus in 132 out of 145 cases of pneumonia. Blood smears were successful in forty-seven of these cases, in three of which the blood cultures had failed.

The heart valves become sclerotic from contraction caused by the many hemorrhages of embolic bacterial origin. Endocarditis is more common in the young than in adults, their susceptibility being increased by the presence of capillary vessels in the valves. Attacks in older individuals and later attacks in children lead to ulcerative malignant endocarditis, induced in the finer capillaries of the damaged valves, the relatively avascular condition of which protects the bacteria from the destroying effects of the leucocytes. The lymphoid tissues of children, in whom attacks of endocarditis and rheumatism are more frequent, possibly assume more importance than infected gums, which become more important as age increases. In a recent paper Hale White reports finding in the urine of patients bacillus coli communis, streptococci, staphylococci, gonococci, pneumococci, bacilli of typhoid, etc. The bacillus most commonly found is coli communis, especially in the urine of pregnant women. Children, as we know, are frequently found to have the common intestinal bacteria in the urine, with but few symptoms. These are, moreover, almost accidental findings, since in but few of these cases is the urine examined. High temperature in children without known cause is an indication for the microscopic examination of the urine. In some instances one kidney in a child may be destroyed by the colon bacillus. We discovered one such case and removed dead kidney in a child five years of age. When such cases are observed late in life it might appear that the individual was born with but a single kidney. The infection may occur through the

genital tract or through the blood stream and rarely by direct penetration of the kidney. Since more than seven female children are affected to one male, this probably indicates that infection often takes place by way of the urethra. In one case the staphylococci found in pyorrhea were also found in the urine. In another case staphylococci were found in a boil, in the blood and in the urine. *Pneumococcus* has been found in pyorrhea and in the urine. The staphylococcus aureus was found in the gums and in the urine; the findings of such bacteria is often unaccompanied by pus, blood or albumin.

According to Loeb and Bingham, acute nephritis is not uncommon following the infectious fevers of childhood other than scarlet fever, in which the frequency is well known. Lewis records the recent epidemic of diphtheria in the city and county hospital of San Francisco, showing that twelve nurses with tonsils developed the disease and about an equal number of nurses whose tonsils had been removed did not develop it.

Murphy states that every type of non-traumatic inflammation of the joint is the metasatic manifestation of a primary infection in some other part of the body. In 1887 Mantel said he believed that rheumatism came from diseased tonsils. Since then many observers have proved the truth of his hypothesis. Frank Billings recently reported some cases of multiple arthritis in which the fluid withdrawn from the joint gave the same strain of streptococcus grown from pus removed from the tonsil. Removal of the tonsils cured the rheumatism. Coombs in a study of experimental rheumatism found the disease to be the same in rabbits as in man, and more readily developed in comparatively young animals. It was produced by cultures from vegetations from the heart valves of a child dead of rheumatism. Rheumatic infection following local infections of gonococcus are well known. It is worthy of note that the local infection is held in temporary abeyance by the more serious infection of the blood. Long ago rheumatism was believed to be caused by the flow of fluids and originally was described as the flow of spoiled fluids from the brain to other parts of the body. Catarrh was believed to be caused by the elimination of the fluid through the mucous membrane. These questionably wise sayings handed down through many generations still have their influence. Many laymen seriously fear the treatment of catarrh, believing that rheumatism may develop if the catarrh is cured.

Schichold reports seventy cases of rheumatism in which pus was found in the tonsils.

Libmann and Ceiler report the finding of pneumococcus, streptococcus and streptococcus mucosæ in the middle ear infections. Kobrak found bacteræmia to be a very significant diagnostic evidence of sinus thrombosis in middle ear and mastoid diseases. They may be present in the blood in varying degrees for days or two or three weeks before other positive indications call for operation. They disappear from the blood within two days after operation and ligation of the jugular vein. They remain in the blood only if some other focus is established as an ulcerative endocarditis.

What, if any, are the factors of defense of the animal or the human being against pyogenic micro-organisms which have gained entrance to the tissues of the body? Wright states that no one acquires protection against disease save by the production of protective substances, that no one can live in the presence of infection save by the aid of these protective elements and that no one recovers from any bacterial disease unless it be by production of protective substances in his own body.

The power within the body of resistance of body fluid and cells, when especially marked against any given type, we call immunity, and the converse term, susceptibility. Birds, for example, have a natural immunity against tetanus. We seem to have a heritage of acquired immunity from ages of vaccinating against smallpox and the disease is now far less virulent. Centuries ago in China and India many people were inoculated for smallpox. This form of vaccination, after being lost for hundreds of years, was carried on again by the brilliant work of Jenner. In working with chicken cholera, Pasteur accidentally discovered that vaccination was efficient in conditions other than smallpox. Extension of this plan of treatment then became rapid and it is now in general use, protecting human beings against a number of diseases. It is also in demand in animal husbandry. Pasteur made a study of germs concerned in fermentation and decay, showing methods of inhibiting their destructive processes as well as of destroying the micro-organisms. The destructive effects of their activities on living tissues were recognized by Lister and he applied Pasteur's principles of the destruction of germs to the treatment of wounds and to operations performed in the surgical theater and thus developed antiseptic surgery.

Antibodies are developed in the sera by dead or attenuated living micro-organisms. The blood itself can be destroyed by certain of them. Antigen is the term applied to the substance which produces antibodies. The reactions occur between bacteria or their products and the body fluids.

Metchnikoff and his pupils have developed our knowledge of the cellular elements of the body as concerned in resistance to infectious germs. Phagocytosis or cell digestion is limited to certain of the white blood cells, some endothelial cells and giant cells. Leucocytosis represents the increased number of the polymorphonuclear or digestive cells, as compared with the normal number, its amount depends on the reaction or the degree of infection. Metchnikoff believes these cells to be the cardinal factors in repair and that the antigen substance in the fluids which is destructive to bacteria is derived from the leucocyte. He also believes that the antigens armed the leucocytes for their work, thus differing from Pfeiffer, who believes that immunity lies in the fluids of the body. Wright, on the other hand, showed that the antibodies disarm the bacteria. In a study of the resistance of the blood, Wright and Douglas discovered a material which they named opsonin which removes the protecting albuminous covering around bacteria and makes them accessible and desirable as food for the phagocytes. Vaccines and serums do not accomplish the mechanical destruction of bacteria, nor can we put anything into the blood of a so-called antiseptic nature which will do so. They act only by raising the opsonic index, thus aiding yet leaving the blood to fight its own battles. Hektoen has done much original work in the support of Wright's views. Goadby shows that the opsonins wear out through repeated doses of bacteria and the immunity or resistance becomes decreased or broken down. In some cases the tissues become hypersensitized to certain infections, a form of anaphylaxis in which accumulated deposits of micro-organisms or their toxins, not necessarily pyogenic but from local foci, are delivered into the body at intervals and for varying periods. In this group with known causes eventually may be placed such recurring diseases as urticaria, asthma, hay fever, and so forth.

Wright's vaccines prepared from bacterial cultures taken from the patient himself, autogenous vaccines, have become of universal application in raising the resistance of the individual against the bac-

teria from which he suffers. Many bacteria grow well in mixed cultures and some are only thus rendered virulent. Vaccines in such cases must be made from combined organisms and not from pure cultures.

In the past the study of the body was looked upon as too sacred a thing to be freely considered by the people, the supposed benefits of medical aid were more or less closely allied with religion and were looked upon as rather mysterious.

The old family practitioner has almost entirely disappeared. In his day suppuration was one of the most common methods of wound healing. He knew but little of microscopic examination and nothing of bacteria and Protozoa. The examination of the blood, body secretions and excretions were limited to the simplest possible tests. He therefore developed to a wonderful degree his powers of observation, now an almost lost art. The patient's facial expression, the eye, the skin, muscle tone, tendon twitching, circulation and especially the condition of the mouth, tongue, gums, etc., were objects of his most careful observation. From such examinations he could give almost as good a prognosis as the modern advanced methods of team diagnosis and prognosis are able to accomplish. It was before this period that Montaign said in regard to the ailment and its cure, whether it came about from the lapsing of a sufficient number of days, the remedies employed, the nature of the disease or the grandmother's prayers, one could hardly say.

A great gain has come to mankind through the treatment of many diseases of which the specific germ cause is known, both by vaccines and the injection of the special prepared sera made from the blood of animals with a natural immunity to special micro-organisms. The years added to human life by diphtheria antitoxin alone are almost incalculable. From one of the most dreaded diseases diphtheria is now much less feared than many others, than scarlet fever, for instance, the infective agent for which is still to be found.

In obscure maladies and cases of puzzling diagnosis their immediate or past presence—however remote—in the system can in most cases be told by the reactions of the skin or of the blood in the body or in a test tube in the presence of proper sera.

From the statements made it may appear that the treatment and

cure of diseases caused by infection is rather a simple matter. This, however, is not the case, for while we are correct in theory, our practical work along these lines has not been sufficiently developed nor can it be successful in more than an average number of cases.

During recent decades the study of diseased conditions in the living body by properly controlled experimentation has shown remarkable results in the health and life of the human race. Much of this advancement is due to the practice of so-called preventive medicine. Up to this point we have progressed as far as post-mortem and pathologic findings would permit.

While today the great mass of our population have an extended general education, their information concerning disease and treatment comes largely from the advertising columns of our newspapers. This is a most serious mistake and an ethical method of rectifying it is now being put into operation through the Medical Lecture Bureau of the American Medical Association.

The prevention of disease today is one of the most important factors in the line of human endeavor. The Panama Canal has been made possible of accomplishment by the conversion of a pestiferous zone into one of remarkable health, a living record of the progress of science since the day of D'Lesseps and his French engineers, who failed in their efforts purely from a medical standpoint.

The difference between the knowledge of the layman and the medical attendant, including the dentist, should not be too great. Medical progress may be stayed from time to time that the layman may be educated to certain truths of health, that he may first know, then desire, and then demand proper health conditions. The public education by boards of health, school inspection, special committees and the medical profession have shown what can be done with that dreaded scourge, tuberculosis. All can appreciate the rapid change in health conditions along associated lines. Nineteen million dollars were spent during the last year in this country in public instruction and care of tuberculosis alone.

It falls upon the dentist and oral surgeon to study the diseased conditions of the mouth. Dental literature is full of it and much original work has been done by such leaders as Black, Talbot, Nodine, Hartzell, Brophy and numerous others. The work is discouraging, but must be kept up, as eventually it will have its effect.

The dentist's patients must be warned of the mouth as being by far the greatest portal of entrance of germ life into the body, *the most infected part of the alimentary canal*. The people will gradually demand more of their medical advisors. The next great step in medical progress in the line of preventive medicine should be made by the dentists. The question is will they do it?

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WHAT DO WE OWE OUR PATIENTS?*

BY C. W. BENSON, D. D. S., DULUTH, MINN.

Our vocation is of such a nature that it gives us an intimate knowledge of some people's dispositions as well as their faults and virtues. Fortunately, the majority of our patients are willing to show us due respect and give us credit for knowing more about

*Read before the Minnesota State Dental Association, June, 1912.

dentistry than they know; but occasionally we encounter some difficulty with others of less congenial disposition or who credit themselves with better judgment than we who are making it our life work. These are the people who have furnished material for most of what is to follow in this paper.

As students we are taught that we should serve our patients to the very best of our ability. Our conscience, governed by the knowledge we have gained when we begin practicing, must determine what that service should be in every particular case. However, our conscience and the patient's intelligence regarding dentistry are often liable to conflict. No doubt many of us have often asked ourselves this question, How much has a patient the right to expect? None of us wish to feel that we are under the supervision of our patients and yet we wish to please them. I, for one, have found it extremely difficult at times to know where to draw the line.

This paper is not designed to give information, but rather to start a discussion which will bring out some practical points from those of longer experience or who, perhaps, have the faculty of overcoming obstacles.

First, let us take up the matter of broken appointments. If you wish to attend a performance at the theater you must, of course, purchase a ticket before you are permitted to enter, whether you are late for the beginning of the performance or find at the last moment that you are unable to attend at all, you still have the ticket and the management has your money. You no doubt surmise what I am about to say. A patient has engaged your time for a certain hour and perhaps telephones to you at the last moment that he or she has been unavoidably detained or as sometimes happens they notify you during the very hour that they cannot keep the appointment. We are certainly not to blame, the patient does not feel to blame, then who should stand the loss? I believe in the majority of such instances the dentist is the loser.

Let us consider artificial dentures. Since the advent of the anatomical articulator and face bow I have been especially interested in this work, for the theory of anatomical articulation, together with the means of carrying out this theory in a practical way has seemed so thoroughly scientific and logical.

The molds of artificial teeth which have recently been placed upon the market are a great help to those endeavoring to attain the

best results in this branch of our work. Enough literature upon this subject has appeared from time to time to satisfy anyone. I have read everything that has come to my notice upon this subject, spent hours in arranging teeth and grinding to meet the theory of anatomical articulation, and to what end? It seems that this part of the work is the least appreciated by the patient. They as a rule have not the faintest conception of what you are trying to do for them. You may explain it all to them with the aid of a natural skull, pointing out the advantage of having posterior teeth with large masticating surfaces, the relation of the compensating curve to the angle of the condyloid path, reproducing these conditions to fit the requirements of every individual case, grinding teeth to simulate wear or anything else that we would do to give them the best that is in our power to give, when, lo and behold! after the case is finished and placed in the mouth some trivial point is brought up for criticism or argument.

If the patient has worn a plate before, even though the bite needs lengthening and the features need to be restored, and you have done so, they see the difference and because it is something to which they are not accustomed they do not like it. In nearly every case where patients have worn plates for a number of years I find upon using large posterior teeth that they bite their tongue, which is natural until they become accustomed to a more limited space. Very few patients, even over fifty years of age, desire teeth which show any wear. Some patients who have old plates on which the pink rubber has faded out so that it is about the color of a tan shoe object to the pink rubber on a new plate, simply because it is new to them. They have looked at the old one so long that anything different to them is wrong.

Now, as for those who have never worn plates, after extraction they begin to count the days until they shall have their first plates. I have had patients wait as long as four months before getting their first plates. Absorption has progressed very slowly, but it seems as soon as they begin wearing plates the process of absorption is accelerated and after a month or two it is so apparent and the plates so loose that one really has not the nerve to ask them to continue wearing these same dentures. Frequently three sets and in one recent case five sets of full upper and lower had to be made before the patient could get what he considered the proper satisfac-

tion from them. Therefore I say that the anatomical arrangement of the teeth is the least part of it. As for trying the case in the mouth before flasking and vulcanizing, patients never seem to see the the same points which they later bring up for criticism. It is needless to say that plate work would not be a very paying proposition on such a basis, for patients as a rule will not pay for the work until they are firmly convinced that they are satisfied in every respect.

Tell me now what is our side of the argument after we have done our best, assuming, of course, that a man has given sufficient time and attention to the work to feel that he is capable of attaining good results. Dr. L. P. Haskell, who has had sixty-five years' experience in this branch of our work, says in his *Manual of Plate Work* that "It does not follow that because your neighbor's teeth are a complete success in all respects yours must be equally so," and in another paragraph he says, "Where patients say they forget they have artificial teeth they are the exception to the general rule." In the face of such statements from a man who has devoted his entire professional life to this one subject, what are we to expect or what should our patients expect? Surely there should be some recompense for earnest, conscientious effort and an average amount of brains.

In regard to esthetic work in the anterior part of the mouth, especially fillings. There are patients who positively will not have gold in any of these teeth, and let me say now that, although porcelain seems to have been pushed into the background, I believe that there are many operators as well as patients who can point with pride to such fillings which are serving their purpose well. Some of us believe that porcelain will yet be a favorite medium for use in these anterior teeth and that our clinical programs will contain many such operations. However, supposing for some reason we do not wish to use porcelain, have we anything so far which we can use and assure our patients will be permanent or even as reliable as porcelain? If we use a silicate cement, should we tell our patients that in case of failure of this material in a year or two we will replace it without charge or should we use it and say nothing of failure? What would the harvest be in either case?

In a paper read by Dr. E. K. Wedelstaldt before the Black Club in 1911 he brought out one point in particular that impressed

me and that was that in the matter of filling teeth the important point was not the length of time that a filling had endured, but why it should not endure forever. We are told that manipulation of silicate cements determines their value or durability; in other words, if such a filling fails we should blame ourselves. Is this a positive fact?

We must admit that the majority of failures in porcelain work are due to carelessness or lack of manipulative skill on the part of the operator or lack of judgment in placing it where some other material is indicated. The toothbrush has undoubtedly whipped out many of those small proximal inlays, but by the abolishment of any metal matrix, as advocated by Dr. Frederick H. Nies of Brooklyn, N. Y., thus doing away with any cement line, this trouble would probably be overcome. Porcelain has done more than anything else to place dentistry among the arts and it seems that more effort should be made to use it in its proper place.

Extension for prevention in the preparation of cavities, I believe, is an established theory, and here again we sometimes wonder if it is worth while in all cases. We have all undoubtedly had nervous patients (or should I say patients whose teeth are hypersensitive?). As is often the case, we find a small cavity on the mesial or distal surface of a bicuspid or molar, especially on the mesial of upper first molars, while the remainder of the tooth is normal and seems to defy any attack by either engine or hand instrument. We know that if this cavity is extended in accordance with the views of Dr. G. V. Black and his followers and we proceed to prepare such a cavity in spite of repeated protests from the patient, when that cavity is filled and properly finished we have done our duty and a feeling of self-satisfaction comes over us. But at times it seems like a ruinous procedure. Ruinous in the sense that these patients are so sorely tried that they simply have not the courage to go through a similar experience. Patients have told me in all kindness and with a full appreciation of my good intentions that I hurt them so the last time that they had not the courage to come back and as a consequence have found another dentist. We cannot blame them in a way. Those of us who have gone through a similar experience know how we feel. Again I ask, which is right, do it our way or do it their way?

Patients often present with a very short bite who want a bicus-

pid crown, but it must not be gold. Would you give them a porcelain crown or insist on a more substantial material in this case? Where a patient will not give us credit for knowing what is best, shall we give them what they want or refuse to work for them? Do we not have to hunt for our conscience in some of these cases?

There are no doubt many other perplexing problems which we encounter in our daily practice, but the points I have brought up have been the most annoying to me and naturally I mention them.

Of course some of our colleagues will say that they always insist on being paid for broken appointments; also that the patient must accept what they give them and of course pay for it. We all know that we do owe something to the public. Something to humanity would express it more properly. We owe them thorough training on our part, cleanliness, punctuality and every possible effort in reducing pain during our operations. We all know that our offices should be as clean as human hands can make them; that our cutting instruments should always be as sharp as possible and all instruments be sterilized when beginning an operation, not to mention personal habits or disposition, which we all observe. We buy new appliances and instruments in order that we may better serve those who have placed their trust in us, and how often have not some of us thrown aside such a new appliance or instrument and procured one of still more recent design and one which we thought would give better results?

Primarily we work to make a living for ourselves and those dependent upon us, and if we can make enough out of our work to be able to save a part of it for a future day when we become less active and the work begins to wear on our nerves, all well and good. Nothing is so pathetic as to see an aged man who has been so absorbed in his work that he has not thought of financial reward or old age.

There are two ideas closely linked. One is that we need a clientele and the other is that the clientele needs us. Now, then, do we observe cleanliness, care, conformity to modern methods,, earnest effort and everything else in practice building, from a selfish motive, as some people would have it, or do we really try to benefit humanity first and then look for our reward? The majority of us undoubtedly put forth every effort in giving our patients the very best service, but do we always receive the consideration that we should?

A short time ago I read an article in one of our monthly publications under the title of "What We Owe Our Patients." The author called attention to many things pertaining to cleanliness, office arrangement, etc., but he made one statement that seemed to place our profession in the "bread line," and that was that when a patient passed three or four other dentists in coming to him he felt that he owed that patient all possible consideration. Does a patient ever pass three or four other offices for any philanthropic reason? Is it not a selfish reason on their part? Do they not follow that course because they believe that they will be better served? Whether it be from past experiences or merely from hearsay, they undoubtedly have such a belief. In fact, most of us would not like to feel that they came for any other reason.

In conclusion let me say that we do owe our patients some consideration, but there is certainly a limit. We are not beggars and if we feel that we have honestly done our duty by our patients we should stand firmly on our own ground and not be influenced by the whims of those who are unreasonable in their demands.

Where shall we draw the line?

ONCE MORE, THE CONTACT POINT.*

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO, ILL

As the title of this paper would imply, this is a reconsideration of a very old subject, and my only excuse for intruding it upon your notice at this time is the fact that so many men in the profession are continuing to ignore it, even after all that has been said and written upon it. The reason for this is very hard to seek because of all the factors involved in the filling of cavities in the proximal surfaces of the teeth this one of proper contact is the most important, with one exception. The chief consideration, of course, is to stop the decay, but aside from this the maintenance of proper contact becomes paramount. Without this there is little comfort to the patient and no assurance that the tooth operated on will be saved. Faulty contact leads inevitably to the lodgment of fibrous

*Read before the Odontological Society of Chicago, January 7th, 1913.

food between the teeth in the interproximal spaces, and this just as inevitably leads to destruction of the gum tissue occupying the space. If it stopped at this it would be serious enough, but unfortunately it goes further and does greater damage. It has frequently been pointed out that disastrous results follow the impaction of food between teeth causing injury to the tissues both soft and hard, and finally resulting in loss of the teeth. It probably never enters the mind of the average operator, even among those who have been impressed with the importance of maintaining the normal contact between teeth, that there was grave danger of losing a tooth as the direct result of bad contact, but the more this matter is studied the more certain it becomes that the loss of very many teeth may be traced directly to this cause. The reason this fact is not more universally recognized is because so much time usually elapses between the insertion of the faulty filling and the ultimate loss of the tooth. On account of this the filling is never suspected, but the blame is laid to some more or less obscure cause which results in recession of the gum and loosening of the tooth. There are, of course, various causes for gum recession, but it is safe to say that in these cases where such disastrous pockets are formed between teeth the initial lesion was started by the impaction of food due to faulty contact. Why cannot the profession be more observant of these cases and detect the original trouble in time to remedy it and save the tooth? Or better, why cannot they understand the philosophy of contact sufficiently to give fillings the correct form? Leaky contacts are usually manifest at a very early stage on examining any mouth. If fibers of food are found lodging between the proximal surfaces something is wrong and it should at once be remedied. Frequently the patient tolerates the annoyance because he does not quite know what the difficulty is and is not aware that there is a remedy. Sometimes he does not even mention it to the dentist till the dentist has called his attention to it. Then he is usually very alert to the situation and anxious to have something done, because of all the petty annoyances connected with the mastication of food this one of leaky contacts is the worst. And when it is known how serious the results may be there should be the heartiest co-operation between the practitioner and the patient to remedy the evil.

Fortunately for the safety of many teeth our patients are becoming more and more sensitive to the irritation of food in the inter-

proximal spaces and will often at once make complaint when this trouble begins, and I am frank to confess that it sometimes taxes the ingenuity of the operator to overcome the difficulty. But no amount of effort should be considered too great to be expended upon the problem.

And this problem involves two considerations, each one of which I wish to discuss separately. One is faulty form of the contact point on the tooth affected, and the other faulty form of the occluding tooth on the opposite jaw. It were too much akin to carrying coals to Newcastle to deal at length before this society with the normal form of the contact point on the proximal surfaces of the human teeth. This has been drilled into the men of this section till they are as familiar with it as they are with the ten commandments—possibly some of them even more so—but a re-emphasis of a few points may be profitable to us all. It goes without saying that if fibrous food is not to be retained between the teeth the area of actual contact must be exceedingly small and that the form of the contact point shall be somewhat sharply rounded. I am aware that this does not seem to convey to the average observer an accurate idea of the actual form to be found on the proximal surfaces of normal human teeth, particularly the molars. The bucco-lingual width of these teeth would give the impression that the contact on the proximal surfaces must be more or less flattened and this impression is heightened by the ordinary method of examining them. If we look into a mouth with a full complement of teeth we see these broad molars apparently in contact for some distance bucco-lingually, but this is really not the case in all normal conditions. The deceptive thing about it is that when we look into a mouth under these conditions the interproximal spaces are filled either with gum tissue or foreign matter or saliva. This obscures the contact point and makes it appear much broader than it actually is. The only accurate way to learn the real area of contact between these teeth is to take two extracted human molars and place them side by side in the same relation which they occupied to each other in the mouth and then hold them up to the light. The area in which vision is obscured by the contact will give the actual area of that contact, and when this experiment is tried it will surprise most of us. It is soon found that even on teeth so broad as molars the area in actual contact is almost infinitesimal.

Of course it must be understood that I am speaking of normal contact. There are many cases of broad contact caused by the wearing of facets in the proximal surfaces of the teeth through the individual movement of the teeth one against the other, but this is clearly an abnormality and should not be considered in this connection, except as it teaches us a most vivid lesson. If the human enamel may be worn to the extent we often see it, then it is apparent that the hardest of our filling materials is none too hard to withstand this wear, and the lesson is that we shall make the contact points on our fillings as dense and hard as we can.

And in recent years I never approach this subject of small, narrow, rounded and hard contacts that I am not thankful for the gold inlay. By this method we are able to more easily and with less inconvenience to the patient make contacts that are true to nature's plan than we can by the same form of fillings built in teeth in the mouth. Not that our master operators cannot make perfect contacts on foil and amalgam fillings. This has been demonstrated too often to call for argument, but that the fact is apparent that the rank and file of operators with the rank and file of patients will with greater ease and more certainty obtain good contacts with inlays than with fillings.

In this connection I wish to call attention to another matter relative to our operations on these cavities in the proximal surfaces and to beg your most careful consideration of it. This relates not only to the form and area of the contact point, but to the mesio-distal width of the filling or inlay. Usually when a tooth decays sufficiently to involve the contact point the teeth drop together and this affects not only the two teeth immediately concerned, but it causes a loosening up of the contacts on several adjacent teeth. To "snug up" the arch on that side again as it should be involves not only the wedging apart of the affected teeth, but, through this means, a tightening of the adjacent teeth. Then the filling or inlay should be given such a form that this tight contact between all of the teeth shall be maintained, and in order to do this it is necessary to make it the full mesio-distal width of the original tooth and in cases where the arch has been much loosened this width should be exaggerated. I look upon this tightening up of the arch as of the utmost importance. It gives a stability to the entire side of the jaw, which usually has been lacking ever since the original contact point broke

down. It is in this one thing that I have had the very greatest satisfaction in the use of inlays. I invariably make them slightly wider mesio-distally than the wax model would indicate was necessary and then they are driven to place with a mallet blow. This will usually cause a temporary discomfort to the patient and the common remark is that the teeth feel too crowded. But this invariably passes away and leaves the integrity of the arch better maintained than if the inlay slipped to place easily. One thing in this connection must not be overlooked. In changing the position of the teeth in this way the occlusal relations are sometimes slightly interfered with to the extent of making a cusp impinge too hard against the opposing tooth. This may bring about a wrenching of the tooth and develop a soreness on closure. It may be necessary under these conditions to grind the offending cusp slightly to relieve the undue stress. In all of our operations this factor of normal occlusion must not be ignored.

Which brings me to the second consideration connected with the problem of maintaining comfortable mastication of fibrous foods, viz., the form of the occluding tooth. It will be found that in certain cases patients will complain of food packing between the teeth, even when the contact seems normal. This happens at times when the troublesome teeth have never developed decay and where the contacts seem satisfactory. It also occurs occasionally after we have done our utmost in the way of normal restoration of carious teeth and unless we understand the cause it is not only uncomfortable to the patient but very disconcerting to the operator. The fault is usually with the form of the opposing tooth. The sharp point of a cusp impinges between the affected teeth in such a way as to spring them apart on closure of the jaws and carry fibrous particles into the interproximal space. The remedy is extremely simple and usually brings almost instant relief, though occasionally in cases where the food has been lodging for some time it requires a reasonable period for the teeth to become firm enough not to spring apart. Ordinarily a bite in modeling compound should be taken and this poured in plaster. This will show the precise relation of the offending cusp to the affected teeth, and indicate where the cusp should be ground to remedy the difficulty. No hesitation should be had in grinding a cusp under these conditions and change it from a sharp wedge shape to a blunt grinding form which will not spring the teeth apart on closure of the jaws.

I had an experience in my own mouth which may be worth relating as indicative of the utter stupidity of a man when it comes to looking after his own comfort. Some years ago I began to have trouble with food packing between my left lower bicuspid. The teeth were not decayed and the contact seemed good. I examined the teeth from their buccal aspect and the occlusion appeared to be satisfactory, and yet the trouble continued. Finally I took a bite and made models. I saw at a glance the trouble. The lingual cusp of the upper bicuspid was turned in such a way as to constitute a very effective wedge to spring the lower bicuspid apart. I ground off this cusp and, presto! I was comfortable. Within the past year or two I have been experiencing great annoyance with food lodging between my second and third molars on each side. I attributed it to faulty natural form of the upper teeth, and as they were sound, I hesitated to have them cut into to remedy the trouble. The annoyance became so great and the interproximal spaces so uncomfortable that I began to fear pyorrhea pockets and was contemplating the extraction of the third molars as a means of safeguarding the second molars when it entered my idiotic head to take impressions of the parts and study the models. With ordinary intelligence and in view of my former experience this should have been done long ago, and it would have saved me much needless suffering. I found that the cusps on my lower molars had worn into sharp wedges and here was my difficulty. I may record that the grinding of these cusps was not performed with the same delicate care that I otherwise would have done the work, when each moment I realized what an abject imbecile I had been not to have thought of this before.

This entire subject of keeping our patients comfortable for mastication so that this function may be performed in its fullest efficiency is worthy of our most careful consideration as practitioners, and no matter how perfect our work may be otherwise, with margins above reproach, with density satisfactory and anchorage adequate, we have utterly failed in our best service to the patient if we have ignored this fundamental factor of proper contact. This is my apology for once more bringing the subject before you for consideration and discussion.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

A regular meeting was held at Hotel La Salle, January 31, 1913, with the president, Dr. J. H. Prothero, in the chair.

Dr. Charles H. Mayo of Rochester, Minn., read a paper by invitation entitled "The Relation of Local Foci of Infection to General Systemic Conditions."

DISCUSSION.

DR. JAMES B. HERRICK:

Mr. President and Members of the Chicago Dental Society: Not many years ago we heard a great deal of what was called cryptogenetic infection, cryptogenetic septicemia and septico-pyemia, meaning by these terms that for the septic condition no known focus could be found. We hear much less of this nowadays than formerly. We are hunting more carefully for the infection atrium through which germs may gain entrance and the more thoroughly we look the oftener is the source of trouble found. Lesions that are small, seemingly trivial and insignificant, are oftentimes found to be the cause of constitutional disturbances that are most grave. Infected tonsils, an alveolar abscess or a slight break in the mucous membrane or in the skin may afford entrance for the germs that may take a life. I have seen fatal pyemia follow from a seemingly insignificant furuncle on the knee. I have at present under observation a patient who is just recovering from a severe illness in which the kidneys and heart that are chronically diseased have been for a time inefficient. This patient the other day had a chill and a temperature of 105°, and the source was a pustule on the thigh that had sprung suddenly into activity. The skin in the immediate neighborhood became inflamed, the glands in the groin were enlarged, there were pleurisy, pericarditis, inflammation of the sheaths of the tendons, inflammation of the ankle and abscess of the subcutaneous tissue in the back; all of these things having originated from a simple pustule. This pustule, as did the blood, showed in culture the streptococcus.

I saw with Dr. Brophy just a few weeks ago a woman who, having a bad tooth, went to a dentist. So far as we could see, he treated the tooth scientifically, but an abscess developed. She re-

turned home from her dentist and took to bed with a chill. She had a large inflamed area over the jaw and in the neck, pneumonia, pleurisy upon the opposite side, with general septicemia; she aborted six hours before death, which occupied forty-eight hours from the time of the chill. It is cases of this kind that make us realize the relations of the physician to the dentist and that we are dealing with a very important subject when we take up the constitutional and general disturbances that follow from slight focal infection in the oral cavity.

Yet after all, it is not these acute processes that are the most interesting and the most important. There is a type of infection that is not frank and acute. There are really two types. I may speak of one where there is a small focus of infection with recurring acute attacks, best illustrated by recurring tonsillitis. A patient with numerous recurrences of this trouble ultimately begins to show some distant effect of the entrance of germs and of toxins into the blood. He develops arthritis or neuritis or possibly he has albumin in the urine. We find, as we study the case carefully and as we examine the tonsils bacteriologically that in them apparently is the focus of infection; and with the removal of the tonsils the albuminuria vanishes, the joint trouble clears up or the neuritis disappears. But more insidious still, though none the less dangerous, are the cases that are latent and without these acute exacerbations. These are the cases of tonsils that within their crypts and beneath the structure of the gland may harbor germs, not very virulent, perhaps, which are constantly producing the toxins and these with some of these germs themselves are slipping into the blood and causing slight progressive changes in various organs of the body. The same is true of the pus foci about the teeth. Or the focus may be in the middle ear; it may be in the prostate gland. Many a case of supposed healed gonococcus infection is still active in a sense because of an unsuspected focus in the prostate gland.

One of your own number, Dr. Kirk, of Philadelphia, has used a term (I do not know whether he is the author of it or not) that strikes me as a most happy one. He says that these patients have "the toxin habit." I think that is a very apt expression. They have the toxin habit in the same way another individual has the alcohol or morphine habit. A man is taking alcohol day after day and he is never perhaps acutely intoxicated. For a long time he sees and

his friends see no deleterious effects; but later, after years, his appearance, his actions, his tremor, are manifestly those of an alcoholic, and some day there comes the explosion of hepatic intoxication. He is examined and is found to have cirrhosis of the liver; perhaps also he has nephritis. He has taken alcohol for years; he has had the alcohol habit, but the result is not shown until years have passed. The same thing is true with reference to many of these foci of infection. For years there is absorption of the toxins; for years a number of non-virulent germs have been passing into the blood and finally we find some joint, nerve or other tissue beginning to show the effect of it. Some of our cases of arteriosclerosis may be due to this constant dissemination through the body of minute doses of toxins; some of our cases of nephritis may have this origin. And so I like to think of the condition, as Dr. Kirk has described it, as the toxin habit. And the recurring cases already alluded to are comparable to the "periodic" alcoholic.

If good is to come from the study of these cases it must come from very early recognition and I think it is here that the dentist and the physician and surgeon can co-operate. It is not enough for us in the study of the case to say that there are enlarged tonsils and they must be removed. That is not a thorough study of the case. We must be sure the tonsils are not only enlarged, but are harboring in their depths organisms that may be harmful. It means perhaps a careful bacteriologic study of the tonsils. It is not enough for you dentists to find there is a pus pocket at the root of the tooth and jump to the conclusion that the constitutional disturbances are due to that. You must remember that perhaps the local condition in the teeth, gums and jaw may be due to the constitutional disturbance. That, of course, is old and familiar knowledge to you. You recognize in conditions of leukemia, in conditions of severe anemia, tuberculosis, diabetes, and so forth, there are certain changes that take place in the gums and in the teeth that are secondary to trouble elsewhere.

I must refer briefly to what I am sure you are all familiar with, and that is the work of Hunter and his views regarding the oral origin of severe and pernicious anemia. For years William Hunter has contended that pernicious anemia was due to oral sepsis, primary gingivitis, stomatitis, glossitis, infection, as he believes, with a peculiar form of streptococcus, the swallowing of these germs,

invasion of the walls of the stomach with resulting atrophic gastro-adenitis, poor digestion, with the production of toxins that are hemolytic, leading to iron pigment deposit in the liver, leading to compensatory hyperplastic processes in the bone marrow. This is his conception of pernicious anemia. He has written a book, and while it is largely polemical, still it is a wonderfully suggestive book, and I am sure you as dentists would be interested in many of the phases of Hunter's work on severe anemias. What I am trying to get at is this, that no matter whether we accept his views or not as final, they are largely clinical observations and they are not really as it seems to me, conclusive—yet if we direct our attention to the severe anemias and pernicious anemias, we shall find in a large proportion of cases that we have either early in the disease or at some stage of it the symptoms described by Hunter—the sore tongue, sore gums and possibly pyorrhea. It is an important fact that we should look into these cases from this standpoint and care for the mouth in cases of pernicious anemia. It is certainly one of the cardinal principles in treatment, no matter whether we believe it is the primary trouble or not.

May I add just a word of caution? It is an easy thing for one to become a faddist. It is easy to follow a fashion and jump to the conclusion that practically all of our obscure diseases may be and are due to small foci of infection. There may be, as the result of a fad, a too wholesale cutting out of tonsils and pulling of teeth. We have seen in our day a good many healthy ovaries sacrificed to a fad. We have seen, as we believe, oculists go to the extreme in the correction of muscular errors and of refractive errors. We have seen even within recent years the most extreme views advocated as to the causation of disease through floating kidney. There have been hobbyists and faddists who attributed nearly all chronic diseases to such things as "pockets and fringes" in the rectum. While we should recognize that there is truth in this important lesson as to focal infections, we must not in extravagant manner think this accounts for all our chronic diseases. It means that in every single case we must individualize. We have got to study each case thoroughly before we declare the illness is due to this or that focus of infection, and before we resort perhaps to radical surgical procedures for the cure.

DR. THOMAS L. GILMER:

The Chicago Dental Society is certainly to be congratulated

on the excellent address of Dr. Mayo and the scholarly discussion given by Dr. Herrick.

Infections of the mouth as a causative factor of disease is not a new subject, only in so far as the demonstration of the causal elements. Thirty-five years ago in my association with older physicians I heard them speak of certain ones of their patients who could not be restored to health until they had their teeth removed, since their mouths were so diseased, and following their removal, with no other treatment, they were changed from tired, nervous, aenemic wrecks into normal individuals. Today we know why and how the diseased mouth is a factor in causing pathological conditions in remote parts.

We have been told by the essayist that all diseases, with few exceptions, are due to bacteria. There seems to be but little doubt of the correctness of this statement. We know that the mouth is the greatest portal of entry of bacteria into the body. We know that in addition to many other varieties, there are certain forms of streptococci, fusiform bacilli and spirilli and diplococci present in most mouths at all times. We know that these organisms under favorable conditions become pathogenic in a high degree and that the mouth often affords the channels necessary for their passage into the lymph and blood streams, through which they may be transferred to distant parts causing joint, lung, heart, kidney and other lesions. They may pass from the mouth through the tonsils, through pockets about the roots of teeth caused by pyorrhea, through pockets resulting from unprotected interproximal spaces, also pockets due to badly fitted crowns and bridges, and there is the chronic alveolar abscess, both the blind and those having sinuses, so prevalent, which harbor at all times pyogenic bacteria.

I made a statement some time ago, based upon what I considered reliable records, that twenty-five per cent of all adults have alveolar abscess in some form. I am satisfied that the estimate is too low. Add to these the individuals having pyorrhea alveolaris, granulating pockets about poorly adjusted crowns and improperly contoured fillings, and we can safely double the percentage, and these from the well-to-do, so the poor who have little or no dental care must be much worse off. If this estimate is correct, what an element of danger hovers over a large number of individuals.

The physician is wise in turning his attention to the mouth in

seeking obscure and baffling etiology. A pertinent question at this point might be asked. Are the medical schools doing their whole duty by their students when they do not include in their curriculum oral pathology?

Many dentists and physicians alike minimize the danger from chronic alveolar abscess, because it has seemed to them that harm so seldomly comes from this disease. It is true that most robust individuals are capable of destroying bacteria and their poisons existing in such limited foci of infection. Here comes in the question of immunity and susceptibility. It is well known that following influenza an old and perhaps unsuspected chronic alveolar abscess is lighted up into the acute type. We also know that the intra mural air sinuses suppurate following an infection by the bacillus of influenza, and how ear infections follow scarlet fever. The normal protectives are not sufficient to give immunity to individuals whose vitality is much lowered. Too great a degree of heat, or too great a degree of cold, change in food, over fatigue and other things lead to susceptibility. It is well known that pigeons, partly starved, or after long tiring flights, are readily susceptible to the anthrax which under ordinary circumstances does not affect them. Some mice which are not easily infected by the anthrax quickly succumb to its influence when caused to be worn out by long continuous exertion.

One reason the dentist does not find evil results from jaw infection outside the mouth is because he does not look for them. If alveolar abscess is found or pyorrhea exists, the dentist should inquire into the physical condition of his patient. If he does this he may find that some of his patients have an arthritis or other disability. If chronic alveolar abscess and pyorrhea cannot be cured by antiseptic or surgical means, then the teeth involved should at once be removed, as it is far better to sacrifice one tooth, or all of the teeth indeed, than to chance serious involvement of vital organs.

Drs. Davis and Baugher of St. Luke's Hospital found in seven out of nine specimens collected from alveolar abscess, which I was able to gather without oral contamination the same organisms which Dr. Davis found in the body of diseased tonsils, that is the streptococcus viridens. These are the organisms associated with endocarditis. A larger number of specimens may give different results, but these findings are decidedly suggestive as to the dangers loitering in chronic alveolar abscess.

I wholly agree with the essayist in what he has said concerning the education of the public relative to oral infections. We of Chicago and dentists of other cities are doing much in this way, but the field is large and the available laborers are comparatively few. The dentist needs the physician's aid in this education.

Dr. Mayo spoke of the prevalence of pyorrhea in pregnant women. I am of the opinion that gum inflammation seen in pregnant woman is not generally a true pyorrhea alveolaris, but rather a gingivitis due to renal disturbances. If it were a genuine pyorrhea it would not appear suddenly during pregnancy and disappear as suddenly after delivery without treatment. It is doubtful if pyorrhea ever results in spontaneous cure. Pyorrhea does not

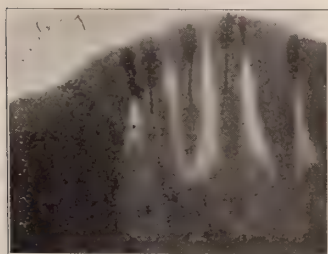


Fig. 1.



Fig. 2.

seem to be primarily a disease of the gums and alveolar process, but rather of the periodontal membrane. This is Black's opinion based on a long and careful histological and pathological study of the disease.

To better illustrate what has been said relative to chronic alveolar abscess and other pyogenic pockets in the mouth, we will exhibit a few lantern slides made from radiographs. I have hundreds of radiographs showing similar conditions.

Number One is a typical case of genuine pyorrhea alveolaris of the lower incisors. In this case it will be observed that the bone is almost wholly destroyed about the roots of these teeth. The gums in this case were nearly normal in color, there was no tumefaction and but little to indicate the extent of the destruction of the process, other than the looseness of the teeth. Pressure on the

gums caused pus to be discharged at the gingival margin. I would not wish to be understood as stating that the gums of pyorrhea patients are not in many cases swollen and inflamed, but it is by no means universal.

Number two is a typical case of a blind alveolar abscess. Here we have a large suppurating cavity in the bone extending nearly up to the nasal fossa. There was no sinus opening into the mouth or nose. Occasionally such abscesses do discharge into the floor of the nose.

Number three is a similar blind abscess involving the roots of the central and lateral incisors and the cuspid.

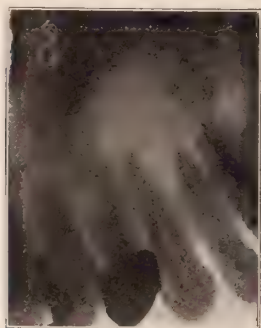


Fig. 3.

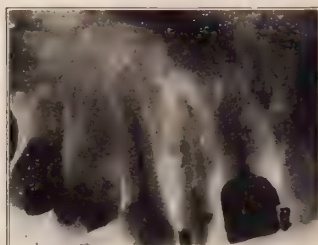


Fig. 4.

Number four shows an abscess at the root of the lateral incisor. This case had a sinus opening periodically on the gum. It will also be noticed in this exhibit that there is a deep pocket in the bone between the second bicuspid and first molar due to the wedging of food between these teeth by the force of mastication.

Number five shows an abscess about the apices of the central and lateral incisions. The death of the pulp in the lateral was evidently not caused by the filling, or by any exposure of the pulp. Pulps not infrequently die painlessly in perfectly sound teeth, and abscesses form as a result and remain indefinitely, unknown to the patient.

Number six is an interesting case. It will be observed that the bone is almost completely destroyed from the incisor region to the third molar. This patient was ill; his color was bad, his digestion poor, his eyes cloudy, his conjunctivae pale. He was running

a temperature of 99° to 100° , a picture of a toxemia. Two weeks after the removal of the teeth and curettment of the bone cavity he was restored to his normal vigor.

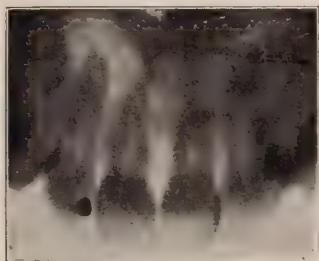


Fig. 5.



Fig. 6.

Number seven shows a large abscess, which had a sinus opening on the gums. Some one had attempted a cure of this abscess by the injection of bismuth paste. The paste can be plainly seen. The ends of these roots are necrosed, therefore are a foreign body and a constant irritant. Bismuth paste promises no hope for a



Fig. 7.

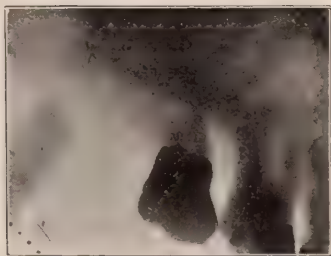


Fig. 8.

cure in such cases. The necrosed parts of the roots must be cut off and the cavity in the bone curetted, as was done in this case with complete cure resulting.

Number eight shows a pocket in the jaw due to poor contouring.

DR. DEAN D. LEWIS:

It is quite customary among surgeons now, whether in the prosecution of their professional duties or taking recreation, to

discuss the clinic of the Mayo Brothers in Rochester, and they generally come to this conclusion that the tremendous success of the Mayo clinic is the thoroughness of their team work. The failure of many to employ this method of team work has prevented them from recognizing the relation of local infection to systemic disease. It was not many years ago when it was an evident fact that gonorrheal arthritis, secondary to gonorrheal urethritis or metastatic infection, was overlooked, and the relationship was considered to be mysterious. The same thing occurred in infections of the joint following pneumococcus infection of the lung, systemic infection as a local manifestation. We have all recognized that mouth infections play an important role in a number of systemic infections. I have seen a general pneumococcus infection develop from an acutely inflamed tooth; but there are several things about the mouth which we are inclined to overlook which should be emphasized, especially by dentists, and that is the relation to carcinoma. While there is evidently a direct relation between that continued inflammation of the teeth to carcinoma or leucoplakia, we have heard discussed tonight the bacteriology of the mouth and systemic infections, and the amount of work done recently in relation to vaccines places within our hands important weapons against these systemic infections. As yet we are absolutely powerless against carcinoma, and the only thing we can do is to exercise good prophylaxis. We have recognized for years that the little pigmented moles may at any time become serious lesions, and an insignificant lesion may cause the death of the patient by metastatic infection. This was emphasized some years ago by Dr. Keen of Philadelphia, in that important contribution by him which stirred up the medical profession and public to a recognition of the prophylactic treatment of carcinoma. We recognize the precarcinomatous stages of tumors of the breast. Surely many tragedies occur by infected teeth, a little benign papilloma developing leucoplakia which causes the death of the patient. It seems to me, in our prophylaxis of these infections about the teeth and the relation to malignant growths, the subject cannot be emphasized too much by dentists and taught particularly to laymen.

Another thing about these infections of the mouth is comparative pathology. We have recognized for years that leontiasis ossea occurs in the face, but only recently through comparative pathology

we find leontiasis ossea bears a definite relation to the type of fibrous osteitis which occurs in man. That has been shown by comparative pathologists in studying diseases of the teeth, and it is not at all uncommon in goats and pigs for them to develop snuffles secondary to involvement of the facial and cranial bones, and the direct application of this comparative pathology may clear up the mysterious diseases with which we are still dealing.

FREDERICK B. MOOREHEAD (read by Dr. James B. Herrick):

The subject of Dr. Mayo's paper has been discussed at meetings of this kind in various cities the past two or three years. It has not been our privilege to read his paper, but knowing the man and his work, we are very certain that a new and better emphasis has been given the subject by Dr. Mayo.

In order to best serve the purpose of the hour, we will discuss briefly but one important phase of the subject—the oral cavity.

The mouth is the most important local factor in pathogenesis in the body. This may sound like an extravagant statement, but it will stand the strain of a sane, unbiased analysis. It is a vitally important organ both in its relation to health and disease. In the first place it is the most exposed mucous surface in the body. It is exposed to irritants which do not reach other mucous membranes.

The epithelium of the mouth is exposed to foodstuffs and drinks at temperatures which often destroy the life of the cell. Again, the mouth is exposed to the indiscriminate use of the tooth-brush, tooth pick, etc. The accumulation of salivary calculus causes a marked irritation of the free margins of the gums. A healthy, intact epithelium is the best protection against pathogenic bacteria. The mouth at all times contains a great variety and number of pathogenic microorganisms, and, whenever the epithelial protection is broken by any of the above causes, the body is at once exposed to various acute infections. We do not know how often the various acute general infectious diseases are caused by this process.

In this group of acute infections must be placed pus infections, and their effects upon the physical economy; first in the matter of the local destruction of tissue, both soft and bone, and second, the more serious end results such as osteomyelitis, pyemia, septicemia, endocarditis, etc. The mouth which contains teeth with dead pulps furnishes a splendid opportunity for pathogenic bacteria to get into the tissues and general circulation.

It has been clearly shown that the tubercle bacillus enters the tissue through root canals of pulpless teeth, and diseased alveolar processes. Tuberculosis of the cervical lymph glands is frequently due to this method of invasion. Just what the relationship between tuberculosis of these glands and pulmonary and joint tuberculosis may be would be difficult to state. But it is not a far cry from the one to the other. Actinomycosis frequently has the same mode of invasion.

The most serious type of infection under discussion is not the one which produces a sharp reaction on the part of the defensive agencies, but the infection produced by an organism of low virulence and yet capable of producing harmful toxins. Notable illustrations of this class are chronic alveolar abscesses, bone cavities in the maxillary bones, and the so-called pyorrhea pus pockets. The invading microorganism is of low virulence and does not produce a sharp reaction on the part of either the tissues or blood elements. In these cases there is no rise in temperature, no leucocytosis or other evidence of reaction. Nevertheless, harmful toxins are formed and enter the circulation in small amounts, and while no reaction is felt by the patient, there is a slow accumulation, which in time will give rise to subjective symptoms in the form of headache, joint pains, loss of appetite, etc., etc. The joint lesions in many of these cases may become very troublesome and entirely incapacitate the patient. The long continued absorption of toxic substances, even in small quantities, is certain to make a definite impression on the physical organism in one form or another, and the removal of the focus may have little or no influence in bringing about a cure. Changes in joints, heart, kidneys, liver and blood vessels may become permanent. In this fact lies the seriousness of chronic foci of infection about the teeth and jaws, and in other parts of the body. Marked improvement, and even a complete cure, may follow the removal of the cause in some cases, but when definite tissue changes have taken place, in the more chronic cases, a return to normal condition may not be expected, and even where there is improvement it is a slow process.

We have no doubt that many cases in which no focus of infection or resulting lesion can be demonstrated, where the patient is physically "below par," might very properly be charged to a long standing low grade toxemia. Bone cavities in the jaws may be

present for years unknown to the patient. The removal of the teeth, responsible for the infection, in preparation for bridge-work or a denture, may be sufficient to cause such cavities to heal. In this manner all evidences of the infection may be destroyed.

In closing, we can not refrain from expressing the conviction that with our increasing knowledge of the complex tissues and functions of the oral cavity there must come a marked change in the dental college curriculum. More than that, the curriculum of the modern college of medicine should make as ample provision for this highly specialized part of the body as it does for the eye, ear, nose and throat. In no other way can this serious problem receive the intelligent attention given to other tissues of the body.

DR. EDWARD C. ROSENOW:

I am in thorough accord with what has been said. There is just one point to which I would like to call attention. It is the relation to the endocardium of a certain type of microorganism which is normally present in the mouth and in such conditions as alveolar abscesses, as pointed out by Dr. Gilmer this evening, namely, the streptococcus viridens—a green producing non-virulent streptococcus. I use the term virulence in a broad sense. All agree that it has no great disease-producing powers, and yet it is so commonly found in a particular form of infectious endocarditis. It is by far the most common cause of infectious endocarditis. The form of endocarditis caused by this organism begins very insidiously, often runs a very long course, extending over a period of three months to a year, or even more, but almost always, especially when the infection becomes thoroughly established, the infection runs a fatal course. How is it that this germ can produce such a fatal disease? By injecting this microorganism into the ear vein of rabbits it is easy to see the mechanism by which this fatal form of endocarditis is produced. It is an embolic process. The bacteria probably gain entrance into the body through the tonsil or from some pyorrheal condition of the teeth, or from abscesses, and plug the fine capillaries of the heart valves. In these little capillaries lies the greater susceptibility of infection of the young heart valve or sclerosed valve. It is impossible to produce experimentally in this way, with any degree of regularity, infectious endocarditis in old rabbits. You can do it regularly in young rabbits. One other reason which enables this organism to grow is the fact that it grows

in long chains and in clumps. It is this characteristic manner of growth and the mechanical protection in the fine capillaries which enables this non-virulent organism in a strict sense to produce this disease.

DR. D. J. DAVIS:

I should like to emphasize particularly what has already been said in regard to the large number of organisms that are present in these foci of infection. I do not refer particularly to the mouth, but to the actual pus found in these alveolar abscesses. If one examines this material, as I have had an opportunity to do, from time to time, through the kindness of Dr. Gilmer, he will find frequently, but not in every case, several varieties—two to six or more varieties—of bacteria. This brings up the rather interesting problem of the relation of symbiosis that exists between the organisms. These organisms are not highly virulent in a sense, yet they may produce toxins, and studying them by themselves in pure culture will give us no idea of what they may do when growing together and under the conditions that may occur, for instance, anerobic or partially anerobic, in the jaw. These organisms include pneumococcus, numerous varieties of streptococci, staphylococci, diphtheroid organisms, fusiform bacilli and probably actinomyces. I think emphasis should be placed upon these latter organisms in view of the very interesting work of Lord, who has actually isolated the actinomyces from the cavities of teeth, and demonstrated that these organisms are pathogenic for animals. They appear to be common in teeth.

I can only appeal to you to make careful examinations of the material from mouth infections. The dentist obtains material which the ordinary physician and bacteriologist working in the laboratory do not commonly have access to, and it remains for you to furnish the pathologist and bacteriologist this material. I am fully aware that much good work has been done in an experimental way upon this material; however, a great deal still remains to be done.

DR. V. P. BLAIR, St. Louis, Missouri:

It is a rather difficult matter to continue a discussion that has gone so far on this excellent and very interesting paper, but I am going to take up one point and that is a partly or completely localized infection might be disseminated as the result of trauma. The reason why foci of infection can persist so long in the mouth without

demanding treatment is first, the mouth being a moist cavity, and as a rule the infected cavity communicating with the mouth, drainage is excellent and we all know what drainage means towards infection. In the second place, the process being essentially a sub-acute one, the focus becomes surrounded by a protecting wall of granulations which more or less imperfectly, not perfectly, prevents the bacteria from being absorbed into the blood. Every surgeon knows that occasionally when he attempts to establish drainage for an infected focus he seems to light up rather than cure the infected focus. There is no place where this is more apt to occur than in the mouth. I will cite the danger of extracting a tooth during the period of low resistance in which the infection seems to be spreading. Take for instance an old alveolar abscess which the patient has carried for years, that may have lit up and become quieted, and lit up and quieted. The fact that this abscess lights up can mean in most cases that the patient's opsonic index and his resistance are lowered, a tooth is extracted as a cure for the abscess, even the patient's life may be endangered. I have seen a number of cases in which death has resulted in young healthy persons—I do not mean old people—from infections of the mouth, that followed within a week or so the extraction of a tooth for an alveolar abscess that was in a state of acute excitement.

THOMAS B. HARTZELL, Minneapolis, Minn.:

I did not expect to be called upon to say anything on this subject. It, however, is one that interests me from every standpoint in which it has been presented. I cannot emphasize too much its importance nor depreciate sufficiently the caution that was given by the second speaker, that we are liable to attribute possibly everything, from ingrowing toe nails to falling of the hair, to infections in the mouth, but I would rather feel that the latter view were the correct one if limited to but one. (Laughter.)

I do not wish to comment on the paper further than to fully endorse and emphasize everything that has been said with the exception of the caution not to go too far, because a clean mouth is absolutely the first requisite to good health, and I do not believe we can emphasize that too much.

I would like to bring out only one or two points. One of them is that the bacteria of the mouth are in a great measure anerobic. Many of them do not grow under aerobic conditions.

If you make smears from the mouth, you see a lot of organisms in the smears, but put them under cultural conditions they do not reappear there because they are anerobic. It does not follow by any means that those organisms may not be pathogenic of many of the obscure conditions we have to deal with. Let me mention one case to illustrate my thought.

Hawkins, in the hospital, entered as a typical tubercular patient, with low temperature, emaciated, anemic, waxy skin, and it was thought he had tuberculosis beyond the shadow of a doubt. (He died and post-mortem examination showed that he was free from tuberculosis.) His disease progressed slowly and presently presented the picture of a typhoid patient; but there were no rose spots on the abdomen; and the Widal reaction was negative. Blood for culture taken under aseptic conditions, but nothing grew upon it. The patient goes on steadily getting worse, with temperature rising, death occurred, and it was then thought well to put his blood under anerobic conditions. Whereupon a very rich luxuriant growth appeared three days after the man was dead, and exactly the same material we found in a small necrosis in the mouth about two central incisors which I removed with finger tips. This growth was anerobic. Here, therefore, is a great field we have not touched. These anerobic growths should be studied more in the future than they have been in the past.

There is another field of observation that has been opened up to me within a few months, and that is the relation of blood pressure to chronic infections of the mouth. The last picture Dr. Mayo showed was that of a young man, 21 years of age, who had by actual measure three and a half square inches of ulcerating surface in his mouth. His blood pressure was 145°. So far as blood pressure and arterial condition were concerned, he was a man of sixty. He has not syphilis. The Wassermann reaction was negative. Everything else is negative. He has no history of any other disease except that of chronic pyorrhea since he was fifteen years of age. Here is a man who looks and acts three times as old as he really is, and I am of the opinion it is from the constant high blood pressure brought on by the continual absorption of a low grade of infectious material. Since treatment his blood pressure has fallen to 120°, and his physical energy has greatly increased.

I have nothing further to say except to remark that I am very

grateful for the opportunity of saying these few words and giving approval of everything that has been said with regard to mouth infection. This association and we, its guests here assembled, are to be congratulated that a man of Dr. Mayo's eminence could take the time to give us this epoch-marking paper for dentistry. We must take heed or we will be stranded among the artisans instead of taking our proper place in the medical world.

DR. W. E. POST:

In relation to the subject under discussion, I wish to mention three diseases commonly seen in the practice of medicine—neurasthenia, neuritis or neuralgia, and lumbago. These diseases usually have some toxic origin. Frequently that toxin is bacterial in origin, and when we listen to the statistics given by Dr. Mayo and the work done in Rochester on infections of the mouth, we see how easy it is for that bacterial infection to be located in the mouth. Many illustrations of each type of disease might be given to show the source of intoxication in and about the teeth. The object in calling attention to these diseases is that both dentists and doctors should pay more attention to the pyorrheal conditions in the mouth. If this is done, fewer of these diseases will need to be sent to the physician, and in the second place when the physician has seen them and referred them to the dentist, better co-operation will be possible in ridding these patients of the source of their intoxication.

DR. M. L. RHEIN, New York City:

The Chicago Dental Society is certainly to be congratulated on the manner in which this important subject has been discussed. I will confine myself to one or two points. A great deal of reference has been made to the forms of bacteria that are found in the tonsils and to the fact that from the amount of work that has been done so far there is evidence that we get absolutely the same attenuated pneumococcus and the same streptococcus viridens, especially in what we know as the blind abscess at the end of the root, but not in the ordinary chronic alveolar abscess. I have had a number of records of bacteriological examinations taken from such abscesses showing this form and the difficulty frequently of getting any distinctive type of microorganism bears out the remarks of Dr. Hartzell, that our attention must be directed in the future more to anerobic experimentation in the bacteriological examinations of these conditions.

As far as our particular line of work goes, this blind abscess is, I believe, the most dangerous form of infectious focus that comes to our attention. We have no drainage here. The patient gives no symptoms of discomfort. In fact, when his attention is called to it, he invariably rebels at treatment, because he has never had any discomfort from the blind focus of infection or from this blind abscess. But without going into details in the limited time at my disposal, the discussion of this subject logically leads to but one interpretation, and that is the form that produces the "toxin habit" to which Dr. Herrick referred; that in the end leads to the manifestation either of an endocarditis, showing some arthritic form of disturbance, or perhaps trouble with the liver or with the kidney. The important relation which this bears to us as dentists is that these blind abscesses are the result of bad dentistry. There is no evasion from that conclusion, and it is important that the medical profession should realize this fact. The other forms of infection, the pyorrheal pocket or the ordinary alveolar abscesses have different etiologic sources, but the blind abscess is invariably the result of imperfect dental administration.

DR. M. I. SCHAMBERG, New York City:

From what has been said this evening in regard to the many diseases to which the human economy is heir, as a result of mouth disturbances, a great responsibility falls upon the dental profession. One might almost be led to the impression that in the future physicians will only diagnose conditions and then send their patients to the dentist to be cured. This, however, is far from the true situation, as was so ably indicated by Dr. Herrick, for there is great room for study in the matter of differentiation between the types of cases which are due to mouth infections and those which are attributable to other causes. Most of us who are practicing oral surgery had been enthusiastic for many years over the influence that mouth conditions have upon the general economy, but at no time has there been such a wave of enthusiasm as is now spreading throughout the dental and medical world relative to this important truth. It is indeed astonishing that in every collateral branch of the healing art, there are keen observers who are making observation which conform absolutely to our views upon this matter.

They are agreed that too little regard has been given in the past to the systemic influences of septic foci in the mouth. I am

somewhat disappointed that Dr. Mayo did not bring out specifically clinical cases in which suppurative appendicitis had been traced by him to mouth infection. There is no doubt that the shape and location of the appendix is such as to invite disturbance in that region, but appendicitis only becomes particularly dangerous when certain organisms reach that point. These organisms, I believe, gain access to the system more frequently through the mouth than any other avenue. Among the many maladies from which patients of mine have suffered, as a result of septic foci in the mouth, were several cases of generalized furunculosis, which cleared only after the complete eradication of the diseased area in the mouth. It is singular that the medical profession for so long a time has ignored this possible field of initial infection in these cases. I am firmly of the belief that tonsillar infections to which many physicians attribute rheumatism come themselves from the frequency with which pus is found in the month.

Just one word in regard to Dr. Blair's statement bearing upon the extraction of teeth during the acute stage: I agree with him that improvements occur through such a practice in almost every instance, and I deplore any attempt to hold in check the removal of teeth that should come out during the acute stage. The proper care of the wound will prevent any aggravation of the trouble and the only cause for the fatal terminations that occur is that the tooth is not removed soon enough and that death follows in spite of and not because of the extraction.

DR. CHARLES H. MAYO, Rochester, Minnesota (closing the discussion):

I am sure that the discussion has been very generous and covers all of the points I left out. I want to thank those who took part in the discussion and all of you for the marked attention with which you listened to the reading of the paper.

REPORT OF ORAL SURGERY CLINIC GIVEN BEFORE
THE CHICAGO DENTAL SOCIETY.

BY DR. VILRAY P. BLAIR OF ST. LOUIS, MO.

A case of fracture of the mandible, on the right side at the site of the second bicuspid tooth was presented, that had been treated by Dr. Holland by wiring the lower to the upper teeth, in appropriate places, after the plan proposed by Dr. Gilmer. The occlusion was perfectly re-established and that is the most important point in the treatment of intra-dental fractures. In this case there was a loose fragment of alveolar process bearing the second bicuspid root, that had a tendency to slip slightly out of place. It was advised that this, for the present, be let alone as later if indicated it could be removed.

The second case was one of a submucous tumor in the anterior part of the floor of the mouth,* which had been referred to the clinic as a ranula. It was in a woman with the history that it had been twice removed and had recurred. Though the growth appeared to contain fluid, it was not at all typical of a ranula, first, in that it did not have the typical grey color, and second, that it apparently had a very thick sack. In the neighborhood of the outlets of the submaxillary ducts there were several growths that resembled papillomata. It was conceded that this might be an atypical ranula, still it might also be a fatty-fibrous tumor of congenital origin bearing some relation to the median septum of the tongue. These may be so soft as to give a sense of fluctuation.

The area of the tumor was freely infiltrated with one-half per cent novocain in normal saline to which was added a small quantity of adrenalin chlorid. A horseshoe incision was made parallel with and just behind the lower jaw. This exposed a lobulated tumor which was drawn forward and dissected free of the floor of the mouth and then from the mucous membrane that covered it. The submaxillary ducts were not observed. The wound in the floor of the mouth was closed with horse hair sutures. Specimen consisted of soft material that was not typically fatty. This and one of the papillomata were preserved for microscopic examination.

The third was a case of a young woman with an almost com-

pletely erupted right lower third molar which was overhung by a fold of mucous membrane. Such a fold forms a catch-trap for food particles and is irritated by being caught between the upper and lower third molars. As the tooth seemed to be destined to come into good occlusion it was recommended that the operculum of mucous membrane be removed. This was done by Dr. Gilmer, by making two converging incisions that met at a point 1 cm. behind the tooth. The anterior free border of the operculum was caught with a sharp hook and dissected from its attachment. This procedure was facilitated by the use of Jaeger's angular keratome.

The fourth case was of a young man who had a severe fall on the face ten years previously. The chin deviated to the right and the opening of the mouth was limited. When forceful effort was made to open the mouth the chin deviated still farther to the right. This latter fact spoke for an interference at the right temporomandibular joint. The X-Ray showed a short, thick neck of jaw on this side, which probably had resulted from a fracture of the neck. As the opening of the mouth was sufficient for function it was advised that no operation be done. If desired, the symmetry of the face could be somewhat relieved by implanting cartilage or paraffin into the left side of the chin.

The fifth case was one of infection of the maxillary antrum, but as the history did not make it clear that this arose from a tooth, she was referred to the rhinologist for further examination. Antra that are infected from the nose should not be treated by the dentist or general surgeon.

The sixth case was in a boy sixteen years of age who had a very wide cleft palate that had been operated upon when he was three months old. Judging from the lack of palate tissue, it was thought that there must have been an extensive slough at the operation. It seemed to be an inappropriate case for a simple von Langenbeck operation, but that sufficient tissue might be gained by packing under the flaps a few days before suturing. If this did not promise enough tissue then extra-palatal flaps would have to be used.

In considering obturators versus operation, the operator ordinarily preferred operation because neither teeth nor an obturator could be worn in the presence of a maxillary cleft after the teeth

were lost and patients with cleft palate were prone to early loss of the teeth. The large observations of Gutsman has led him to conclude that speech results are better after operation than with the use of an obturator.

PROCEEDINGS OF SOCIETIES.

MINNESOTA STATE DENTAL ASSOCIATION.

Discussion of Dr. Benson's paper, "What Do We Owe Our Patients?"

DR. W. A. ROBERTSON, Crookston:

This paper it appears to me is one of great practical value. When I had the pleasure of looking over the paper first it struck me that Dr. Benson seemed a little discouraged, and I want to say to the doctor right now that those of us who have been in the harness a little longer have all had those trials and tribulations. We find all classes of patients; there are practically no two alike and I do not know of any place where the weakness of patients comes out as it does in the dentists' offices. After you have done the best you can they will often show ingratitude and you will find that humanity is the same today as in Christ's time. He cured the ten lepers, but only one came back to thank him. Where did the other nine go? The doctor emphasizes conscience. Conscience in dentists has always been discussed in public as practically an unknown quantity. I have had a great many people say they did not think a dentist knew what a conscience was. So I am glad that it has been reincarnated again. We are all taught high moral standards in our college, and that is proper, because I believe the best dentists, as in all phases of life, are those with the high ideals. We should all have one ideal and that is "Do unto others as you would have them do unto you." The matter of broken appointments is one which is largely a matter for each individual to decide for himself. I have never been able to decide it satisfactorily for myself.

The matter of artificial teeth the Doctor seems to think a bugbear. After thirty-one years' experience I look upon artificial teeth as probably the most satisfactory part of my practice. Possibly this is due to the way I handle my patients. I do not always take

them into my confidence and tell them what I am going to do and what I am not going to do and bring out my charts, but I take my impressions and go ahead as I think right, and if I realize the patients are a little critical I suggest, if it is a lady, she bring her husband or some friend with her, and we set the teeth in wax, and I say to them, "If there is any change you want made, now is the time to make it. Don't come back after it is all done and tell me this thing is wrong and that is wrong." After they have once committed themselves that they are right they do not feel that they can come back. Then the plates are finished; and here, gentlemen, I think is the secret of success in the majority of plate work that I have made for a good many years—that is to have patients pay for a plate before they leave the office. In eight cases out of ten you will never see those plates again unless they hurt, and the other two cases you may possibly be glad to see them because you see where you can make an improvement on them. Then I impress upon patients that they have got to learn how to use them, and I frequently tell them if they are able to eat within two or three weeks with any degree of comfort they are doing pretty well.

There are so many good points in this paper that I might speak of, but I will simply say something on this subject of extension for prevention. Those of us who have lived in the West and had the privilege of attending the G. V. Black Club's clinics have certainly been impressed with the idea of extension for prevention, but when we get into our offices and some old patient comes back we begin to extend for prevention and then the question of the golden rule comes in. How would I like to be treated this way myself? And, gentlemen, that is a fine point that has to be taken into consideration. It is a debatable question, so I will say, use extension for prevention with discretion. It doesn't mean mutilation of the teeth. It has often been said to me, "If you believe in extension for prevention, you cut the teeth all to pieces. That is what Black teaches." I have had more than one occasion to bring out his latest book to refute this statement. I am sorry more of you were not here to listen to this paper.

DR. E. S. BEST, Minneapolis:

Mr. President and gentlemen, having had less experience in these matters than the essayist, I hesitate to make any criticism, much less offer any suggestions. I am looking for about the same information as Dr. Benson.

First, regarding the vexing problem of artificial dentures. Let us for a moment place ourselves in the unfortunate and unenviable position of the patient applying to us for relief from their misfortunes. These cases usually have a long history of aches and pains or else a disheartening experience in attempting to wear dentures already constructed for them. Do you wonder that they may easily be the hardest class of patients to please?

For some time I have worked along a plan somewhat similar to that suggested by Dr. Robertson inasmuch as I set the teeth up in wax, having generally ground and stained them; and then give the patient ample time to examine carefully when placed in the mouth, allowing them to make any suggestions they may wish. Before the patient leaves the chair at that sitting I have their promise that if the dentures look when finished as they do then they will be satisfied with the appearance of them at least. To make them do their work and be comfortable is simply a problem for the dentist to work out, making allowances, of course, for such unfortunate experiences as the essayist has had.

Regarding the porcelain inlays, I often think if our operations had the ability to speak, the porcelain inlay would be the most indignant of any. How often have we covered up our inability or carelessness by condemning the use of this, the most artistic of all filling materials.

Many of us have become enthusiasts and proficient to a less or greater degree in some particular operation and I would like to ask, have we in handling porcelain developed that dexterity of manipulation, that satisfaction of having become its master, that ability to judge where to use it so as to not place it in jeopardy, that some operators have in those pet operations of which they are so justly proud? If we have, and porcelain has proven a failure, then we are justified in condemning it. If we have not, then we still owe something to our patients.

Up to date cast porcelain has not proven satisfactory on account of its discoloration, so we have to depend on the method of burnishing the matrix and mixing and blending our porcelain. And I contend that no operation in dentistry calls for as much patience and skill and yet so richly rewards the operator on the completion of a good operation as does the construction of the porcelain inlay.

As for broken appointments, gentlemen, our patients will place

no higher valuation on our time than we do ourselves, and when we impress upon them the importance of promptly keeping their appointments, and tell them they must be paid for if broken without notifying us, and then supplying each patient with an appointment card for each appointment, my experience has been that very few appointments will be broken.

I would also make a plea for the little folks. When we consider that these little tots come to us with all their innocence, do we not leave a debt unpaid if we fail to do for them all that tact, patience and perseverance will do?

In closing, just a remark on the comprehensive inspection of the mouths of our patients. Do we look carefully at the condition in the mouth, noting any irritation of the gums, any lack of contact, improper or malocclusion and examine all surfaces of the teeth and tell the patients what they need, or do we simply attend to whatever trouble the patient indicates, do the operation under the directions of the patient and accept, with humble and profuse thanks, the fee offered?

Truly it may be said that this subject opens up a field for a large amount of careful thought and consideration.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held January 7, with the President, Dr. C. S. Case, in the chair.

Dr. C. N. Johnson read a paper entitled "Once More the Contact Point."

DISCUSSION.

DR. J. G. REID:

Mr. President, the subject of the paper is a good one and within the past three four or years I have been impressed with the fact that the very question now under consideration is one that has been neglected to a much greater extent than we realized, if we would only give it more satisfactory attention in our clinical work as we should from day to day. Only yesterday I was impressed still more with this fact. A gentleman, for whom I have done dental work for twenty-five years, a lawyer, a very finely educated man, had been going to another dentist for six or seven years to have his dental work done. He had a very important case for this dentist,

and he allowed him to take care of his teeth, but he came back, as all bad dollars do once in a while, and said: "Doctor, I have for the last three or four years been greatly annoyed with having to pick my teeth, and really when I sit down to my table to eat my meal I have to have about three toothpicks on each side of the plate. I have been embarrassed on account of the criticism I have received from members of my own family for picking my teeth at the table. But I am so uncomfortable that I cannot get through a meal without doing it. I have either got to pick my teeth or quit eating." If you were to look at his teeth you would say that they were perfectly occluded teeth and in normal relation. They all seem to be in contact. With reference to the point brought out by the essayist in regard to the wedging of the cusps between the teeth, in these cases I have had that in mind a long time. I have noticed that myself, yet never had sense enough to write a paper about it. But it is a good point and one well worthy of consideration. If we would only think a little there are lots of things we could write about. This is a little point that has been overlooked by a great many, and yet we realize how important it is. But I examined the occlusion of this man's teeth, and singular as it may seem, it did not coincide with the views of the essayist, and that is the reason why I am dwelling on this particular thing now. In this particular locality, where he is annoyed by picking up the fibers of food between the teeth, there is absolutely no wedging at all. The molars bite squarely opposite the other molars. It does not cover the space. The upper bicuspid does not interdigitate. If Dr. Johnson will explain that one thing to me I shall be very much obliged. The only way I can account for it would be in the peculiar movement of the jaw in masticating; that he in chewing brings the molar over this space probably, or the bicuspid, whichever it may be, and that did not occur to me until after he left the chair. The next time I will have him move his jaws to see whether that is true or not, because it is not from the actual up and down movement that is done, and it can only be accounted for from the fact that there must be some antero-posterior motion of the jaw which forces the food in between that particular space. He said to me, "Can it be corrected?" I replied that I thought it could by restoring the space with a filling. "Well," he said, "get right at it at once, if that will do it."

I think the question of the contact point is really neglected by too many dentists. I have neglected it myself in the past. It has never impressed itself so much upon me as it has within the last two or three years. It has taken a long time to find it out, but it is coming to me in my dotage, and I think I am going to do a little better work. In fact, I believe I am doing better work than I ever did in my professional life. I presume that comes from long experience and from becoming more observant of things as we see them.

I am very glad it has been our good fortune for Dr. Johnson to present this subject, but when I received a notice of the meeting I said there comes that old chestnut. But he has put a new suit of clothes on it, so to speak. In other words, he has cracked an old chestnut and got a good deal out of it.

DR. ELLIOTT R. CARPENTER:

I have listened with a great deal of pleasure and instruction to Dr. Johnson's masterly paper, and the greatest regret I have outside of the instruction I have received is that I cannot take issue with him on any of the points in his paper.

My first attention was called to faulty contact points through a very kindly pointer given me by Dr. Royce a few years ago upon the use of carbon paper in restoring proper articulation of teeth, and after having studied them for a while I began to observe conditions at the interproximal space as I never had done before, and this leads to one point I might add to the paper, and that is, in some cases where the cusps of the occluding teeth are very marked, at the contact point below, if it were a lower space, a little piece of carbon paper put in there, after the inlay has been driven home, would mark that cusp so you can grind it without taking a bite and making models. That is a point I am grateful for getting.

I have here a specimen which I am very glad to exhibit to-night, which was one of the first cases I ever had when my attention was called to a series of faulty contacts in the whole mouth of an individual who had no proximal cavities, but had very strong teeth, while the facets were worn to an unusual degree, so that there were spaces to start pyorrhea pockets in all teeth back of the cuspids. I then began studying the case. This had gone so far that it had to be removed. The man had a nasty case of pyorrhea and along with it he was a man of intemperate habits. He drank

to excess and smoked to excess, was exceedingly nervous, and there was a constant grinding of his teeth night and day, until they presented sharp edges, so that every time he masticated, forth and back, the teeth moved with it. I never saw a case where the contact points were cut down in the whole mouth to the extent that was. There is very little I can discuss in the paper because I am so thoroughly in accord with everything Dr. Johnson has said. I wish to thank him for the splendid way in which he has brought the subject before us.

DR. TRUMAN W. BROPHY:

I feel that all that has been said expresses an important phase of the work that the president of the society (Dr. Case) is engaged in, namely, the question of posing teeth where they should be, so arranged as to make their occlusion correct. This subject is an important one. It has not received the attention its importance demands. It awakened in me a greater admiration for the domain of dentistry. It will lead to the placing of the teeth in a condition of greater usefulness. It will relieve those who have suffered, as remarked by Dr. Reid, in a way they have not experienced before. Those people, if the principles laid down in the paper are carried out, will be able to live more comfortable lives than they have been living.

I appreciate more than I am able to state the enormous value of this paper to the dental profession and the public. I have heard our essayist on many occasions; on the occasions of great meetings, where the world's valor and intellect in dentistry have assembled, and I will assure you I never have heard him present a paper that impressed me more deeply than the one he has read tonight. Of course, this paper will receive a larger audience than is present here. In our coterie we come together, read papers and discuss them, but we have a larger audience than we anticipate. The audience includes the readers of our transactions. This paper strikes an important keynote in dental literature, and I trust that it will be given the broadest possible publicity. I would like very much to see it published not only in the DENTAL REVIEW, but sent to foreign journals, and every editor of a dental journal, who knows the needs of the dental profession and the needs of the public like ourselves, would keenly appreciate its merits and its usefulness to mankind. Were I able to do so, I would speak in stronger terms in appreciation of what has occurred here this evening. I thank you.

DR. F. E. ROACH :

It takes Dr. Johnson to put a new dress on any subject he attempts to write upon, or if he attempts to crack an old hickory nut, he brings something new and interesting out of it and to the point.

I do not think Dr. Johnson expected what he read in this paper would reach its ultimate benefit in this audience. The profession at large will be benefitted by what he has written in this paper. Personally it has done me good. It is like all subjects we have to deal with, those of us who have been in practice for fifteen or twenty years. We need these things brought home to us, and emphasized for those who have been in practice a long time. We are liable to become a little lax in the details of our work, and I think this paper will prove very beneficial to us all.

The question of the contact point is undoubtedly one of the most important things we have to deal with in the treatment of dental lesions generally, not only in fillings, inlays, but in prosthetic procedures in general. It is always my endeavor in crown work and inlay work to get good contact points, and there is no place where contact is more overlooked than in the construction of shell crowns. If you will excuse the plain expression, I see some bunged up operations from shell crowns, especially because of the necessity in many of these cases of filling more or less the interproximal space with the crown itself, and a lack of taking time for opening up the space and making a sufficient separation between the adjacent teeth to fit in a crown that will restore proper contact, and at the same time proper interproximal space, and these things are among the abominations we see in crown work that has brought the censure from men such as Dr. Hunter and others who have written on the subject of crown and bridge work, and of the injury and damage done to humanity by reason of the imperfect construction of crowns and bridge pieces. In many of these cases, while we may think we have fairly good restoration of these shell crowns and inlays, they are not properly reenforced and made sufficiently solid and the surfaces hardened by flowing upon the inlays or the contact surfaces solder.

Everything that Dr. Johnson has said I can most heartily endorse with the exception of one statement. I want to challenge one remark he made, in defense of our friend Perry. I am not making this defense in my own behalf. Dr. Johnson made the statement that it is impossible to make a hard contact point by using

Weston's metal. Dr. Perry says that you can make the hardest contact point, if you have not done it, with Weston's metal. I have made two or three of these fillings to see how they would last, and while I am not defending this material from my own viewpoint, you can insert a nice steel button at the time of the investment, with the point sticking out, so that it will be encompassed in the investment compound, and cast on the steel button which will constitute the contact point. Dr. Johnson says that this steel point will oxidize, but he can use iridio-platinum or clasp metal.

DR. E. J. PERRY, Washington, Iowa:

I have had some things on my mind in the last year which have been very beneficial to me in my practice, and I have always maintained that the dentist should do that thing which he himself can do best, and it is his province and his duty to his patient to do the best thing for them he can do, and not because somebody else does it, but because he can do that particular thing himself best.

As to the paper of the evening, it has been stated that the point of contact is an old chestnut, but Dr. Johnson has dug out some features of that contact point that never have presented themselves to me in the manner in which he has presented them this evening, and I entirely agree with him that it is second in importance only to the perfection of the stopping of the cavity. Of course, hermetically sealing the cavity is of first importance, and yet if the cavity is hermetically sealed and filled in the best possible way, if there is not a good contact point, the filling, however good it may be, is impaired possibly 100 per cent.

Recently I had an experience with this contact point where the teeth interdigitated and I had to put in a Weston's metal inlay in a second permanent molar. The first permanent molar on its distal surface carried an amalgam filling, and it was a good filling. I hardly think there is any man living (there may be some dead possibly) that can make a first-class contact point with amalgam. It is a possible thing, but it is a might difficult thing to do. In putting in this filling I paid particular attention to the contact point of the inlay, and that thing returned to me, and I did not know what was the matter. I ground this cusp which came down in between the distal side of the first molar and mesial side of the second molar against my inlay, as Dr. Johnson has pointed out in

his paper, so that it would not cut in so sharply. I did not care to take out the amalgam filling for economic reasons, and I thought it would perhaps be unnecessary to take it out. But I finally removed it and restored the contract. I did this first: I filled the tooth with red gutta-percha and allowed him to use it for six weeks, and as red gutta-percha bulges I secured a little separation. I did not make the contact buccally and lingually clear across the tooth. I made a small contact point, and he took pains to come into the office and said he was eating with great comfort. He was a farmer who came to me in his automobile, and, by the way, 75 per cent of the people in Washington County, when the weather is favorable and the roads are good, come to town in their automobiles. (Laughter.)

Through the use of inlays I have been able to eliminate all large amalgam fillings. I am in the habit of saying to my patients that an amalgam filling is a temporary expedient, especially if it is a large one, and I have never yet seen an amalgam filling that did not in the course of time leak some.

I want to emphasize what Dr. Roach has said about crowns. I do not make one-fifth of the crowns, possibly not as large a percentage as that, that I made ten years ago. I do not like to make gold crowns, but I have to make them sometimes. I make these large restorations with inlays, using the Taggart technic entirely—I am sorry to find some of the best men in this city do not use that technic—and I am having the most excellent results with my inlay work. In Washington I follow a man who was a graduate of the Chicago College of Dental Surgery, Dr. William M. Terry, a most lovable boy. He was one of the finest young men I have ever known. He was a most excellent gold worker, far above the average man in skill, and an indefatigable worker. He never shirked duty a minute. The last five or six years he began to make these large restorations with inlays, gold inlays. What comes back to me, a large gold filling restoration? Not on your life. The percentage of these fillings which come back is very small in comparison with the percentage of gold inlay restorations that come back, many, many of them looking as good as if they had been worn but one day. My patients down there will not permit me now to put on the rubber dam and hammer in these large restorations. I can make these large restorations with inlays and set them long be-

fore I could make one of gold foil. I do not believe that on the basis of sufficient skill to make these large gold restorations with foil, they will be as nearly perfect as my gold restorations by the inlay method. What is an inlay anyway but a protected cement filling? It is nothing else, and what is a perfect filling without hermetically sealing the cavity? Is there any therapeutic value in any of the materials we have except copper? None at all. Then the thing that saves the tooth is hermetically sealing the cavity. If I can hermetically seal that cavity and make an inlay restoration, and that work comes back to me looking better than any other work, I cannot revise my conclusions because somebody else tells me to. Not on your life. I won't do it. I have practiced dentistry all these years and have made some observations myself. I am defending the inlay.

Dr. Johnson says that Weston's metal is too soft. It is as hard as pure gold, if not harder. I have cases in which some of these restorations have been in a year or more, and they come back looking just as good as the smoothest pure gold inlay. The only thing I save is the expense to the patient. If the expense to the patient is no consideration, then I would use gold of course. Gentlemen, let us shed a few tears over the fellow who cannot afford gold inlays while we are shedding tears over the other people. If a man comes into my office abundantly able to have his teeth fixed, and it makes no difference to him whether the bill is \$50 or \$150, and he is willing to pay for the service, why should I economize for him? I do not do it. But there is a host of people in the country whose cavities in teeth are filled with amalgam. On the authority of one of the distinguished writers in the West, Dr. Volland, between 80 and 95 per cent of the teeth of the people throughout the country are filled with amalgam. How about that 95 per cent? Let us raise the standard of that work. How are we going to raise it? By giving better amalgam? No. We are not getting a better amalgam than we ever did. The amalgams that were formerly on the market were just as good as they are today. We can only do these things by large inlay restoration.

Again, with reference to the contact point which we are discussing, I can only emphasize what Dr. Johnson has said, and there is only one thing in which I would disagree with him, and that is the abuse of himself when he designates himself as an idiot. (Laughter.)

DR. GEORGE W. COOK :

I want to emphasize one point the essayist brought out by relating a little personal experience. The contact point has been a great source of annoyance to me, not only in the filling of teeth but in my own mouth. Some twenty years ago a very splendid and competent operator put in a gold foil filling in an upper first molar for me, and also one in the second bicuspid. By some force or stress I broke off the inner cusp of the second bicuspid, and the filling was dislodged in that tooth, and I remember calling on one of my friends to restore the space with a crown. In making a crown for that space he could not restore the contact point which had never been there in those two fillings that had previously been inserted. But the crown was put on, and I went down to the Illinois State Dental Society at Springfield, and if there was anything that was annoying it was the interproximal space between those teeth. I was standing in the lobby with a silk thread trying to dislodge the food from the interproximal space. The dentist who inserted the crown came along and asked what I was doing, and I said, "You have ruined my mouth." (Laughter.) He said: "I will fix that for you as soon as we get back to Chicago." He took the crown off, and made a contact point and replaced it, but he did not do it soon enough, so I have lost all the gum tissue in the interproximal space, and I am nearly in as bad condition as I was before, but if the two fillings had had proper contact points in the beginning there would have been no trouble.

I am glad that this subject has been brought up again for discussion, because I think almost every one who has had teeth filled is more or less bothered with that one particular thing, the contact point. The gum tissue in the interproximal space is one of the most important physiological conditions that we have to deal with in the mouth, and whenever anything takes place in the mouth that in any way interferes with that physiological arrangement there is great loss to the patient. It does not matter whether it is a broad contact point or a narrow contact point. But there is one point that every dentist who puts a filling into a tooth should remember, and that is he should study as systematically the putting in of that filling as he does the preparation of the cavity and should clearly understand what he is doing. The case related by Dr. Reid is simply one illustration of what you will find in thousands of

mouths of people who have been under the care of good conscientious dentists otherwise, but they have not studied the contact points. You will find it almost everywhere; and the remarks that have been made here this evening with reference to Dr. Johnson taking old hickory nuts, cracking them and finding new meat in them are well taken. Oliver Wendell Holmes, when he was criticised for plagiarizing the writings of other people, said, "I have never said in my writings and in all my speeches anything that was new, as it was said by somebody long before I came into existence." Dr. Johnson has given us a new viewpoint, and he is always able to do that.

DR. J. E. HINKINS:

This subject has been covered so well that there is very little left for me to say. I have enjoyed the paper very much. I do not feel that I can add anything to it except to review an experience I had with our late member and friend, Dr. Harlan. He was very proud of his teeth, and about two years before his death—he had an acute form of pyorrhea. He had lost the third molars, but up to that time he had a full set and with the recession of the alveolus the teeth became loose and he lost the contact point. Up to that time I had paid very little attention to the contact points except in a casual way, and during my trips to New York to see my patients I spent a good deal of my spare time working on his teeth, treating the pyorrhea and trying to make him comfortable. His Teeth got into such a state that he could not eat meat with comfort without the fibers being wedged between the teeth. I first tried putting in inlays, but as the alveolus would recede, and the teeth would get looser the contact point would be lost, so that for the last year and a half wherever he had a proximal filling I would take orange stick and force it between the teeth down next the gingival margin and force the contact points together, and then fill with amalgam and let that wedge stay in there until the amalgam set. I took one side and then the other of the upper and lower jaws, and for probably two or three months he was fairly comfortable, but as soon as these teeth became loosened then the contact point would give way and he would have the same trouble. In fact, I wedged some of the molars so far back until they were distorted and had to grind the teeth off to give comfort. He got more comfort from that than

in treating the pyorrhea. This was the first case that called my attention to the contact point and its importance, and since that time I have paid more attention to it than ever before. Dr. Johnson comes along with a paper tonight in which he hits the nail on the head, and personally I want to thank him for it.

DR. E. J. PERRY:

Dr. Johnson spoke of the firmness of the contact point in securing the teeth in position. The loss of one tooth anywhere in the arch, barring the third molar, and that is sometimes affected, will loosen the space between the teeth, and I and you have been bothered with the contact point upon perfectly sound teeth where there was the loss of a tooth or an extreme separation that has taken place between the teeth or for some other cause these teeth have gradually or slightly separated and formed a space which would admit of the fibers of meat to pass down in there, so that wedging the teeth together tightly by a tightly fitting contact point was one of the most significant things Dr. Johnson has said in his paper.

DR. C. S. CASE:

While this may be a very old subject, Dr. Johnson has certainly clothed it in a new and interesting light, which has not heretofore been associated with it, so far as I know, and which has presented ideas that are important and instructive. For instance, the influence of masticating cusps which interdigitate upon the cusps of two opposing teeth will, when worn to a wedge shape, tend to drive the two opposing teeth apart, if not prevented by sustaining forces; as may occur with the loss or the irregularity of one or more of the teeth in the arch. An important influence also which he failed to mention, arises from the fact that the mandibular joints are not on a line with the occlusal plane, but considerably above it, so that as the occlusal surfaces of the teeth wear away—as always occurs—the mandible continues to close further and further forward driving the mesial surfaces of the lower facets more and more forcibly against the distal facets of the upper denture. This action is particularly noticeable with people older than 35 years of age whose lower front teeth in their original early occlusion, closed just back of the uppers and well past their cutting

edges, so that the front of the lower teeth, nearly or quite touched the back of the uppers. The forward movement of the mandible caused by the wearing away of occluding surfaces must necessarily produce either one of the two conditions or perhaps both: i. e. The upper front teeth will be forced forward and apart, commonly opening a wide space between the central incisors, or the lower incisors will be driven together, over-lapping and closing the interproximate spaces, both of which conditions are conducive to pyorrhea.*

It has been mentioned here that the extraction of a single tooth changes the occlusion to a certain extent, and that that effects the contact point, or sometimes the entire denture, which is surely a fact. The gradual closing of the space will often change the positions of all the teeth upon the side from which the tooth was extracted, causing malocclusion and malrelations of the normal contact points which may induce pyorrhea. A crowded malocclusion that is not particularly deforming may seem to be of little moment, at any age, or at least one which does not demand the services of an orthodontist, and yet I believe it is these very cases in which pyorrhea is found most frequently after 30 or 35 years of age. When teeth are malturned, especially the front teeth, the normal contact points ceases to keep them sufficiently apart at the gingival margins for a healthy condition of gum and pericemental tissues; the interproximal spaces being at times nearly or quite closed.

This is particularly true as I have said of the lower front teeth later in life, because of the forward movement of the mandible. That is one reason why we find so many cases of pyorrhea in the lower front teeth later in life. The method of treatment which I have advocated for many years, is to extract one of the incisors, and move the adjoining teeth bodily to close the space, thus giving more room for the lower teeth, by placing them in an upright position of alignment, with a restoration of normal interproximate spaces, and opportunity for healthy circulation and tissue. Many cases of otherwise hopeless pyorrhea alveolaris which would have been inevitably followed with premature loss of the lower front teeth, have been placed in a perfectly healthy condition in this way.

*This idea was fully brought out by Dr. Case in a paper entitled "Abnormal Interproximate Spaces," and illustrated with models and appliances for correction; read before the April, 1903, meeting of the Odontological Society, and published in the February, 1904, number of the DENTAL REVIEW.—Ed.

DR. C. N. JOHNSON (Closing) :

I have been very much gratified at the discussion this evening, and I shall touch on only one or two points.

As to the case spoken of by Dr. Reid, if you recall, the cusps of the teeth in the opposing jaw did not interdigitate with the affected space. It is unnecessary, Mr. President, for the cusps to act as a direct wedge immediately over the space. If a bite were taken of that and models made of the lingual aspect, it would be found that the relation of the cusps to the opposing teeth was such to the lower teeth that they would spring apart even if the cusps did not come between. There is an inclined surface at some place upon the other tooth which acts as a wedge and springs them apart.

I wish to thank Dr. Carpenter for the suggestion of the use of carbon paper, but in all these cases I take impressions and make models for the purpose of studying them from the lingual aspect. We may examine them from the buccal aspect and not be able to determine that there is any wedge force exerted upon the teeth, but in studying the model from the lingual aspect we can frequently detect wedging there when we could not detect it otherwise. I can take the impression and make a model and I am able to grind the teeth more intelligently. I want to speak of a certain class of cases I did not mention in the paper, one of the cases that gives probably as great concern as any other and that is this: Supposing we have a second bicuspid lost and the first and second molars drifting apart, these teeth may be perfectly sound or we may have the first permanent molar lost, and the second and the third molar drifting apart and perfectly sound—these are the cases that are the most hopeless because of the fact that if we restore the contact the teeth have no lateral support and they drift apart again. The manner in which I have been managing that class of cases has given me the most satisfaction of anything I have done connected with the work of maintaining comfortable mastication, that is banding these two teeth with gold or platinum, fastening those bands together with solder, making them fit as perfectly as possible and cementing the bands on. Those teeth are maintained rigidly, and if you have an opportunity to try this method, you will find it will meet more of these cases and make the patient comfortable for mastication than any other one thing.

I had occasion to examine a case within the last month of a

gentleman who unfortunately in his early days had lost some of his teeth, and there were two molars drifting apart. When he came to me about his teeth I said to him, "the only thing I can do is to band the teeth and that will be an experiment." He said, "band them, even if you have to take them off afterwards." That was done, and shortly after he said, "that is the most comfortable thing I have had in my mouth." That was done ten years ago. Those bands have been on ever since. That man would not have had either one of those teeth if they had not been banded and supported in that particular way. I am doing that more and more, banding those teeth which have no lateral support.

In regard to the use of the baser metals for filling teeth, I recognize the apparent necessity of saving a patient money in all cases where we can if the patient is poor. I believe that I enter into the patient's point of view as intensely as any man who practices dentistry. I try to at least, but I do not believe, and I have said this many times before, that any material is good enough to go into the human teeth, and hence I must oppose the use of these baser metals in inlay work. I use amalgam, but I am sorry I am obliged to do so. I admire the dentist who says he never uses amalgam if I think he is telling the truth. I must use it because I consider the patient's point of view; but when it comes to an inlay, there is so little difference in the intrinsic value of the material that is used between gold and the baser metals, that I do not believe any man is justified in putting in the baser metal on account of that little difference. It is our time and service we are paid for, and not the material we are using, and to make Dr. Perry more inconsistent, he gets up and in one breath tells us that 75 per cent of his patients come to him in automobiles, and in the next breath he says he is trying to save that kind of people a few cents on fillings that go into the teeth. If a patient can afford to buy an automobile, he can afford to pay for a great many inlays. If I were placed in that position, I would rather walk to town and have my teeth properly filled with gold and do without an automobile, rather than have a dentist use Weston's or Watts' metal or other such makeshifts for filling teeth. Dr. Perry is practicing in a community where it is unnecessary for him to economize in the matter of filling material. The American people are not so poor but what they can afford to pay the few extra cents that it will take to have a gold inlay rather than one which

is made from one of the baser metals. I want Dr. Perry to go back to Washington and preach the doctrine that there is nothing good enough to go into human teeth. These people will pay for gold inlays. It is a matter of educating them to do so. We must educate these people into believing and feeling that their teeth are more important than automobiles, and in this connection I humbly submit that we are not called upon to shed many tears over the financial status of people 75% of whom are riding in automobiles.

PRESENTATION OF A CANE TO DR. J. H. WOOLLEY BY
THE ODONTOLOGICAL SOCIETY OF CHICAGO.

At the December meeting of the Odontological Society of Chicago, the president, Dr. C. S. Case asked the vice-president, Dr. L. L. Davis to take the chair while he read the following:

"Before formally opening the program that has been prepared for this evening's entertainment, I wish to say: that when elected as your president at the last meeting, I was simply so over-whelmed with surprise and with reluctance in accepting any office however high, I fear I may have appeared to you ungracious, and with little sense and appreciation of the honor which you conferred upon me. As I have gradually awakened to a fuller realization of the act, and see the kindly motive back of it—prompted by friendship and love—the wish to keep me with you after I had already resigned, and when, as I believe, I was not even a member, I can but poorly express to you my full appreciation, my pride and my gratefulness for insisting upon my acceptance, even against my wishes. Not because of the honor which the office confers—that part of it has never appealed to me as it does to many—but purely because—coming exactly as it did—it was one of the highest evidences you could pay me of your friendship and confidence. I shall therefore remember and cherish this act of yours higher than any other honor which I have ever heretofore received from the hands of my fellows; notwithstanding the fact that I have in mind a number of honors, unsought, and mostly undeserved, which have been conferred upon me by my professional friends, and which from a worldly or professional sense would be considered even far higher than this. I speak of it here, because I want you to know that of all these high honors and others which have fallen to my lot, I value

above them all this simple act of yours with its surrounding circumstances, because it shows so much better than anything else could, the friendship, the confidence, and the love of real friends.

"It is acts like these which come to us from our friends while we are living that make life worth the living.

"How much better it is to confer distinctions of all kinds upon friends whom we believe deserving and whom we delight to honor while they are living among us, and not wait until they are dead. And yet how many a rose has bloomed unseen and lived out its life of purity contentedly giving what it could, even its life for those who thoughtlessly thrust it aside only to awaken too late to a sense of what they owed to that rose after the rose had died and could no longer respond to expressions which they would have given worlds, had they but remembered to express before.

"This is a-propos to the little poem which I tried to remember at our last meeting, and which runs as follows :

If I should die to-night
My friends would look upon my quiet face
Before they laid it in its resting place,
And deem that death had left it almost fair;
And laying snow white flowers against my hair,
Would smooth it down with tearful tenderness
And fold my hands with lingering care;
Poor hands so empty and so cold to-night.

If I should die to-night
My friends would call to mind with lovely thoughts,
Some kindly deed the icy hand had wrought,
Some gentle words the frozen lips had said,
Errands on which the willing feet had sped;
The memory of my selfishness and pride,
My hasty words would all be laid aside;
And so to-night I would be loved and mourned.

Oh! friends I pray to-night
Keep not your kisses from my dead cold brow
The way is lonely, let me feel them now.
Think gently of me, I am travel worn,
My faltering feet are pierced with many a thorn.
Forgive, O! hearts estranged, forgive, I plead,
When dreamless rest is mine, I shall not need
The tenderness for which I long to-night.

The dental profession of New York has been particularly happy in starting and continuing the fashion, followed by Chicago, of conferring deserving honors upon the living. The grand banquets and presentation of mementos of love and appreciation to dear old

Darby, Truman, Walker, Black, and others, and now we look forward with pride and pleasure to the complimentary banquet to be given to the one who is the dearest among them all, Dr. Truman W. Brophy, whom we who know him best are delighted to have the highest of the world's honors.

"Many of you may not be aware also that still higher honor is coming his way and that steps are on foot for its accomplishment.

* * * * *

"And yet after all my friends what do these very high honors amount to compared to even the simplest of tokens which have behind them the true sentiments of true hearts whose love and friendship and respect we care for.

"There are those about us who are content and even delighted to go through life in a quiet even humble way; whose days are marked with no blare of trumpets, pomp, or ostentation, and yet whose lives at most times are fairly overflowing with happiness for being permitted to live in this beautiful world, with health and ability to provide for those who are dependent upon them; men of simple deeds, of kindly acts, of noble motives, prompted by no desire but to do good to others and to stretch forth a helping hand in time of need. Their hearts and souls are not stunted and marred by wrong doing and dissipation. They can go out into the world with clean hands, clean hearts, and with clear brains, and fairly thrill with pleasures, which many who are gorged with wealth, with honors, and with satiated ambitions never see or even know about in the deeper, truer aspects.

"My friends there is just that kind of a good fellow with us here tonight—a member of this society; a man who has not cared to climb to the so-called pinicles of his profession, to be gazed at as a shining light, where envious eyes abound, and eager hands to pull one down. I doubt if this man to whom I refer has even tried to reach the high goals of professional ambitions, finding complete contentment and happiness along "the softer winding paths of life, where man may walk with unruffled soul and drink the wayside waters till his heart is stilled with its over-flowing happiness," thrilled with the rich melody of birds, the sweet prattle of children, and the babble of brooks, seeing beauties in a fallen leaf and blade of grass, and thus to go through life, humbly, but no less surely feeding the soul upon that which is best for its development, and

future worth. So when the time comes for him to fold his tent and wrap the mantle of his couch about him, he may go forth with unfaltering trust that his name, when the scroll is unrolled, will be found with Abou Ben Adhem, at the head of the list, as one who loved his fellow men.

"Gentlemen let us rise and drink to our brother and our more than friend, Dr. Jefferson H. Woolley."

Dr. Woolley was then presented on behalf of the Society with a beautiful cane in token of the high regard in which he is held by the members.



THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

THE PRESENT STATUS OF FREE DENTAL INFIRMARY WORK IN CHICAGO.

In addition to the Englewood free dental infirmary, which was one of the first started in Chicago, and which is still running and doing excellent service under the direction of the United Charities of Chicago and the Englewood Dental Society, there are at present ten infirmaries located in the public school buildings in different parts of the city where the children of the poor can receive dental service free of charge. These infirmaries are conducted by the Public Service Commission of the Chicago Dental Societies in conjunction with the Department of Health. The equipment was furnished by private contributions, mostly through the generosity of Mr. Julius Rosenwald, who is also paying the salaries of the operators. These infirmaries are open during school hours every school day in the year. The supplies are furnished by private contributions, and the rooms are heated and cleaned by the Board of Education. Inspection work is carried on by volunteer service from members of the dental societies under direction of the Department of Health, and already about 40,000 children have been examined, with a percentage of 95 defective.

The value of this infirmary service is being demonstrated daily. Principals of schools are loud in their praise of the movement, and acknowledge that it is already increasing the efficiency of the pupils. The waiting list at each infirmary is far in advance of the operator's capacity, and as the movement becomes more widely known the

demand will be greater. During the month of February, 1913, more than five thousand operations were performed at these ten infirmaries, and already the amount of suffering that has been relieved has more than repaid for the money and energy invested.

As soon as sufficient funds can be raised a campaign of education will be started to enlighten the parents and children on matters of oral hygiene—this being really the most significant thing that can be done for the public welfare. To induce people to prevent disease is far preferable to curing the disease after it has occurred, and it is along these lines that the commission hopes to move, now that provision is being made for the relief of existing suffering.

AN UNRELIABLE FOUNDATION FOR A METAL FILLING.

There seems to be a tendency among some operators to adhere to gutta percha as a foundation upon which to build a metal filling in those cavities where an intermediate is indicated between the metal and the pulpal wall of the cavity. The indications for an intermediate relate to cases where there is so nearly an exposure of the pulp that the proximity of the metal filling will endanger the life of the pulp through shock from thermal changes. Metal is known to be a conductor and one of the characteristics of an intermediate is that it shall be a non-conductor. In this respect gutta percha is one of the best materials we have, and it is probably this which induces so many operators to use it. But it has other qualities which render it wholly unsuitable for the purpose, and it should seldom be used.

Gutta percha is compressible and does not furnish a sufficiently stable base upon which to build a filling calculated to receive any appreciable stress. It is usually amalgam which is placed over gutta percha, the softness of gutta percha manifestly interfering with the adaptation of gold against it. An amalgam filling, anchored on a gutta percha base, cannot be relied on for good service. In a short time after insertion such a filling will develop unsatisfactory margins and the whole filling is inclined to shift under stress. This admits a leak around the filling which usually means the beginning of the end.

If an intermediate is called for it should be made of cement

which will maintain its form after crystallization better than gutta percha. In view of the fact that the strength of a filling is in the metal and not in the intermediate material, whether of gutta percha or cement, care should be taken not to leave too large a mass of the intermediate in any cavity. To fill a cavity nearly full of gutta percha or cement and then place a mere veneer of metal over it is to invite failure sooner or later. The intermediate material should be only thick enough to interfere with conduction and the reliance for anchorage and strength should invariably be placed upon the metal filling.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the March Issue.)

FIJI CONTINUED.

We had the pleasure of seeing a native Samoan dance on board the ship while in port at Suva. Those Samoans appeal to me, of course in a different way, from the Fijians. They are a mellower race with the softer graces more prominently developed. Their facial types are more pleasing and, as I have said in a previous chapter, some of them are very beautiful. They are not so black as the Fijians, and seem in many ways more civilized. I want to visit Samoa some time and meet them in their native homes and get better acquainted with them. It was the Samoan Islands which Robert Louis Stevenson selected as his ideal place of residence, and if the Samoan people generally are of the type we saw at Suva I want to commend his taste. We met on our way out some planters who were conducting cocoa bean and cocoanut plantations in Samoa, and one of them used every artifice known to man to induce us to change our route home and go to Samoa and visit him on his plantation. It would have been delightful for us, but it involved too many changes of boat with some uncertain connections, which meant altogether more time than we could spare.

I wish I could convey to my readers an adequate conception of that Samoan dance. Never have I seen anything like it. It was not the wild orgy with which we are accustomed to associate the

dance of savages, such for instance as that of the North American Indian, or some of the black tribes of Africa—in fact nothing about the Samoans suggested savage life. There were twelve men in the main performance, arranged in a solid phalanx, four abreast, with a promiscuous background of men, women and children, among which were the musicians. The chief instrument was the drum, but not the kind of drum we are accustomed to see at home. It was something like a woven reed mat rolled up and slightly flattened, and held down by the drummer while he beat upon it with a couple of flat sticks. The time that chap could keep was worth while. All,



Native House Fiji.

of course, were seated on the deck, or rather squatted, with their legs bent akimbo in front and their feet nearly under them. The queen was seated about the middle and directed everything. She was good looking, gracious and regal, and deserved to be boss.

All at once the fellow, whom we would call the end man at home—though he was near the center of the line—began a low musical chant, which soon gained volume and was taken up by the others. The drum commenced to beat, the hands to wave, and they made quick and graceful gestures in perfect rhythm—each in the most wonderful unison with the others. I never saw anything like it outside a military drill, and be it said, to the advantage of the Samoans, that some of their movements were more complicated

and difficult than any military manouever. They must have trained for that dance all their lives. Suddenly they turned like swivels and faced right about, all the time keeping up a perfect rhythm. How they made that movement so quickly I could not understand. After they had in turn faced every point of the compass they sprang to their feet with the greatest agility, the music and chanting increasing in speed and volume all the while. On their feet they showed to better advantage even than they had while sitting. Of course, all were bare footed, but that did not prevent them from beating a rhythmical tattoo on the floor. Instantly down they flopped again, as if shot to a man, and, beating time all the while, they began to close ranks toward the rear, leaving a clear space in front on the deck. Now came the climax. A beautiful woman weaved into the limelight, followed by a dainty little girl of ten or twelve, and they gave us an exhibition of fancy dancing such as I have never seen. That little girl in particular was as graceful as a fairy, dainty, lightfooted and altogether charming. If there was life in the dance before it was now the concentrated essence of excitement. We all began to applaud that little elf, which kept her constantly smiling and tiptoeing about in her little bare feet. Our hand-clapping made us one with the animated dancers—we were all barbarians together, and all happy. A man, naked to the waist, jumped up and danced vis-a-vis with the woman, while the little fairy girl pirouetted around the fringe of the crowd. I never saw anything more beautiful. Climax after climax was reached till we were all at fever heat, when suddenly, like the gentle sighing of the dying wind, after a storm, the music softened and the dancers faded to rest.

On the boat coming out the passengers had given several dances and I could not help comparing this Samoan dance with the incongruous, awkward and altogether grotesque attitudes of some of our civilized dancers. I vote for the Samoans every time. There was a grace, a rhythm and a unanimity about their dancing which was in striking contrast with the go-as-you-please performance of most of our modern dances, where each couple has a style or, in most instances, a lack of style, all its own. There was only one thing about the Samoan event which reminded me of civilization—they passed the hat. The coins were emptied dutifully into the lap of the queen, who smiled graciously, and the dance was over.

And now the first whistle blew for the boat to leave. There

was the usual hurrying and scurrying here and there, the frenzied effort to get off the last bit of freight, the shouldering of baggage and the chatter of the motley crowd on the dock. Above the noises always and forever was the shrill chatter of the Fijians, the most prominent and officious feature of the scene. I can imagine that the average Fijian likes to be boss. The importance with which one of their number who happens to have a higher position than the



On the dock at Suva, Fiji—(The tracks are merely for smah hand push carts).

others, will order them about is quite impressive, but mostly it is amusing.

I somehow cannot tear myself away from reflecting on the characteristics of those black rascals. I like them with all their limitations, and I shall be sorry if the time ever comes when they are wiped out. I saw their native huts, thatched and not uncomely, I watched them walk and their stride is agile and almost majestic, I saw them in their boats on the water, and they are, of course, one with the elements, I studied their dress—what there was of it—and it was commonsense apparel for that climate. The women I saw were gowned something like the whites, with the two exceptions of shoes and corsets—a great improvement, I

thought. In fact, I didn't see a native of any kind on the island who was not barefooted—consequently they have no need of corn doctors. The men, for the most part, are naked to the waist with a simple *sulu* reaching to the knees. This costume shows to advantage the splendid muscular form of the wearer, and I am wondering how a similar lot of white men would look parading around in a costume like *that*! They couldn't stand comparison with the blacks for an instant. Score one more for the savage.

There is a certain tribe among them who possess the secret of being able to walk barefooted over hot stones, with apparently no harm. They are called the Firewalkers, their home is on the Island of Bega, which we could see from the carriage on one of our drives. All in all, I never expect to encounter any other people on earth so wholly interesting as these. They have been called bad names in the past, and even today I would not care to accept them as a steady social diet, but considering whence they came and their early proverbial racial instincts and traditions, it is a perfectly wonderful thing to find them as acceptable as they are. Please remember that it is only a decade or so since they were all cannibals, and at this point I must take up briefly the subject of all others for which I am sure my readers have been waiting ever since I introduced the natives of the Fiji Islands.

The question is often asked if there are any cannibals left, and it is usually answered in the negative—to the comforting effect that it is entirely a thing of the past. Don't you believe it. Cannibalism exists today in all its pristine purity in some of those beautiful islands of the southern seas. Of course, there is nothing of it in Fiji—that has been touched too much with civilization, and they point with pride to a small island near the mouth of the Rewa River, Mbau by name, where lived, died and was buried Cakobau, the last of the great cannibal kings. That would seem to settle it at Fiji, but remember that there are numerous other islands in these seas, many of which have never been penetrated by whites, and on some of which, I am most credibly informed, cannibalism is still carried on as a fine art.

Little is said of it because the white man would like to have the world believe that he has succeeded in suppressing it, but I am about to relate a fact in connection with it which I was not unsophisticated enough to swallow without the most rigid investigation.

Considering the source of my information and the circumstances under which I obtained it I have not the slightest doubt of its genuineness.

I have just said that cannibalism is carried on as a fine art. How true this is may be inferred from the fact that there is a certain island which is set aside as the fattening ground for the victims. There is one tribe who seem to be more edible and better flavored than the average, and the cannibals need not be considered so lack-



Fijian House Boats.

ing in discriminating taste as to accept all products with the same satisfaction. It is the difference between the ordinary barnyard fowl or the gamecock, bred for other purposes, and the milkfed chicken raised to grace the table. Each is all right in its way but intended for different destinies. The grim old fighters among the savages are not supposed to furnish the most savory dishes, and so the tribe of big lazy, good-natured fellows, like the proverbial fattening steer, are transported to this island and kept for future use. They know for a certainty when they are placed there that it is only a matter of time when they will be "killed for the market"—

to use a home expression—but they do not seem to care. They are like the steer, they have the best of everything, and so far as the end is concerned—well, in the first place, they are not fighters, and in the next place, if they ever think at all, they are fatalists—the end must come to everybody, so what is the difference? Maybe the cannibals teach them that if they die in a good cause, they will go at once to the black man's heaven without paying further toll. And who knows, after all? When I see the miserable existence which some poor mortals are forced to suffer in our large cities—year in and year out struggling to secure the bare necessities of life, and groveling daily in the miry slough of despond; when I see the suffering mentally and bodily, the agony, the despair, the defeat, the failure, the strained faces, the drawn limbs and the hollow eyes—when I see all of this in our boasted civilization, I am reminded of a remark I heard a philosopher make the other day: “It is never a misfortune not to be born, but it may be a great misfortune to be born.”

I know this is rank pessimism and I do not wish to be classed as a pessimist, but the application is this: Since traveling among the savages I have seen many things which make me wonder, after all, if there are not other points of view than my own which are worth considering. I could not be a savage. Fundamentally and temperamentally I am opposed to it all. I am a hothouse plant, purely and simply, a spoiled child of civilization, and I am exceedingly glad of it. But after this I shall condemn no man for his practices till I look somewhat closely into his philosophy.

Cannibalism will be stamped out—there can be no question of that. It is too revolting to a white man to be tolerated, and the white man is to dominate the world; but first he must penetrate to the uttermost corners of the earth, and this, with all his boasted prowess, he has not yet accomplished—not by a very long shot.

C. N. J.

(To be continued.)

BOOK REVIEWS.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. NORMAN BROOMELL, D. D. S., Dean and Professor of Prosthetic Dentistry, Dental Anatomy and Histology, Dental Department, Medico-Chirurgical College of Philadelphia, and PHILIPP FISCHER, M. D., Associate Professor of Histology and Demonstrator in Embryology, Medico-Chirurgical College of Philadelphia. Fourth edition, revised, with 368 illustrations. Price, \$3.00. Published by P. Blakiston's Son & Co., Philadelphia, 1913.

This well known work has now been before the profession a sufficient time to give it a definite status in our literature. The present edition is even more acceptable than the previous ones, having been revised and brought to date with many new illustrations. The cuts in the histological section of the work are particularly interesting and original, and will repay a close study. For the general practitioner probably the most interesting chapter is the one on "Anomalies of the Teeth," which contains many unique specimens of teeth and roots, and particularly some rare examples of fused teeth and conrescences. The many readers who are already familiar with this work will find a treat in store for them when they open the new edition. One thing in particular seems most commendable in the volume, and that is the evident attempt on the part of the authors to employ only the most recent and scientific nomenclature. This matter has apparently been carefully studied, with the result that the text is made clearer to the student and altogether more acceptable to the general reader.

THE PREVENTION OF SOME COMMON DISEASES IN CHILDHOOD. By J. SIM WALLACE, D. Sc., M. D., L. D. S., Dental Surgeon and Lecturer on Dental Surgery and Pathology, London Hospital; Hon. Dental Surgeon, West End Hospital for Nervous Diseases. Pages 104. Price, 3/6. Published by Bailliere, Tindall and Cox, London, England, 1912.

This little volume is made up of occasional papers published by the author in various medical and dental journals, and they are here brought together with the idea of presenting consecutive thought on the subject in a more systematic way than could be ex-

pected from scattered publication in periodicals. Dr. Wallace has made a distinct impression on the dental world, and in a lesser degree upon the medical world, in his advocacy of a rational and scientific diet as a cure for many of the ills which affect humanity, and it would be well if the medical profession, under whose direction the diet of children is largely regulated, would study more carefully what he says, and test out the theories which he has advanced. The significance of the mouth and teeth as factors in the health of the individual is only now beginning to be recognized, and the subject is being forced upon the attention of medical practitioners as it never has been before. In this volume Dr. Wallace considers as well the baneful effects of oral sepsis as the beneficial effects of proper diet, and urges strongly the education of the medical profession along this line. He says: "We are dentists, and as it is supposed that the dietetic regime should be left to the medical profession, it does not seem likely that we shall be able to do much without the co-operation of medical men. And when we have the great authorities paying all their attention to the nutritive value of the food it is difficult to persuade anyone that lack of oral hygiene accounts for far more trouble among children than lack of nourishment."

The book should be read by medical men and dentists as well—in fact if it were placed in the hands of the laity it would do incalculable good.

AN INTRODUCTION TO DENTAL ANATOMY AND PHYSIOLOGY, DESCRIPTIVE AND APPLIED. By ARTHUR HOPEWELL-SMITH, L. R. C. P. Lon., M. R. C. S. Eng., L. D. S. Eng., Prizeman of the Royal College of Surgeons of England, Lecturer on Dental Anatomy and Physiology, Dental Surgeon, and Demonstrator of Practical Dental Histology at the Royal Dental Hospital of London; Member of the Faculty of Medicine of the University of London; etc. Large octavo, 372 pages, with 340 new and original illustrations, including a frontispiece in photogravure and 5 plates. Cloth, \$4.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1913.

The name of Hopewell-Smith is so well known that it is scarcely necessary to do more than to announce a book from his pen. In the present volume which he modestly entitles "An Introduction to

Dental Anatomy and Physiology," he deals quite extensively with comparative dental anatomy, and thereby lays the foundation for the more specific study of the teeth of man. It is really a very entertaining book to read aside from its scientific value, and he who studies it will be broader-minded and better educated as a result. The author seeks to introduce what he deems a reform in nomenclature, to the end that the incisors shall be called the "first" and "second" incisors instead of the "central" and "lateral" incisors. The word "bicuspid" should be dropped entirely and "premolar" should take its place. All of which emphasizes once more the crying need for a uniform nomenclature which shall be so carefully studied out and so systematized that scientific writers the world over may agree upon it and employ it in their works. It is probably true that many terms are retained in dental nomenclature chiefly through personal preferences, and it is also true that names are dropped through the same influence. One term which the distinguished author uses quite freely, we confess, has always seemed to us as out of place and incongruous when applied to the human teeth. This is the term "canine." What objection there is to the term "cuspid" to take its place we do not know. But this is no place to quibble over terms, and we cordially recommend the work as one which will stimulate thought and do much good.

PRACTICAL HINTS.

EDITED BY J. E. SCHAEFFER, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaeffer, THE DENTAL REVIEW, 810 Masonic Temple, Chicago, Ill.)

Buckling of Gold Plates:—To prevent the buckling of gold plates in swaging, cut a slit at the median line, from margin to ridge, lap, when swaged, solder. This should be done in all cases as this is the weakest point and breaks there. By doing this the weak point is doubled in strength.—*L. P. Haskell.*

Keeping Inlay Wax Warm:—It is very desirable to always have the wax used for gold inlay models at a workable temperature

without the necessity of heating it for each separate operation. This is accomplished in the most satisfactory manner by the use of the Murray wax and water warmer attached to the switchboard and using seven volts.—*Elmer S. Best, D. D. S., Minneapolis, Minn.*

To Make Ideal Gold Dummies:—After procuring the model bearing the attachments, select from your reserve stock of porcelain teeth those which approximately fit the case, imbed them in plaster, tip them out and anoint the mold thus obtained with glycerine, burnish in casting wax, remove and make any corrections necessary by shaving the wax. Cast and you have an ideal piece of work.—*C. E. Allen, Chicago.*

The Tonsil:—The faucial tonsil is located between the anterior and posterior palatine arches, and consists of lymphoid tissue with more or less interstitial connective tissue. The surface is covered with stratified epithelium. Normally, there are present from ten to twenty crypts which penetrate the gland and empty on the surface. These crypts are subject to many pathological changes due to infection and subsequent degenerative changes of the cells with the deposition of a detritus.—*T. W. Brophy, M. D., D. D. S., Chicago.*

Bad Teeth Affect the Mind:—The first case was a young man, 21 years of age, who had developed from a bright, honest little boy into a thief, burglar and convict. The boy spent two years in the House of Correction. He went very willingly because he felt his lack of self-control and thought he might be cured, but he came back not cured and with a contempt for all law and order.

Professor Upson had a skiagraph made of the boy's mouth, and he found a wisdom tooth badly impacted, several of the molars abscessed at the roots and also one of the incisors. He extracted all these teeth. A month later the boy went home and obtained a position, his mental condition gradually improving. Several months later another abscessed tooth was extracted. Immediately following the extraction there was a great increase of all the nervous symptoms, but these never amounted to insanity as in former attacks. Two weeks later, however, there was a wonderful change for the better, and the boy has steadily improved ever since. There

has been no return of the immoral or mental symptoms.—*Dr. Clara H. Town, Lincoln, Ill.*

How to Fill the Roots of a Badly Broken Down Molar or Bicuspid:—Where the break extends below the gum line and it is impossible to apply the rubber dam, prepare the cavity in the usual way for an inlay or amalgam filling. By the use of cotton rolls and the saliva ejector the root canals are cleansed and small strands of cotton with a good antiseptic dressing placed therein. Then a small pledget of cotton, saturated with eucalyptol, is placed in the pulp chamber and over that a piece of temporary stopping rolled to the size of No. 12 or 14-gauge wire and cut so it extends from the pulp chamber in the center of the tooth at least one-eighth of an inch above the occlusal surface. Now fill the cavity with amalgam, using a thin German silver band if necessary, keeping the small rod of temporary stopping in place. When the tooth is filled, trim off the temporary stopping even with the tooth. The day following, the rubber dam may be applied, the band removed if one has been used, the temporary stopping removed with a fissure drill or bur, and the roots treated and filled, just the same as though both the buccal and lingual walls of the tooth were intact.—*George D. Sitherwood, D. D. S., Bloomington, Ill.*

Danger of Teeth Affecting the Antrum:—We all know without going into details, the proximity of the roots of the teeth to the antrum, so there will be no need of considering the anatomical relation of the teeth to the antrum, but it would be well to add that the antrum, in its anatomical position and size, varies to a great extent in different cases. The first pathological condition of the teeth, which I consider in direct relation to the infection of the antrum, is the abscess condition of the roots. The bone very easily becomes carious where there is an abscess in direct proximity. The carious condition advances very rapidly, owing to the fact that the bone of the superior maxillary is diploetic. Therefore, we can readily see how easy it is for the fistulus opening forming between the root abscess and the antrum. In this class of cases, there have been a number cited where the tooth had been forced into the antrum by the patient, and one case of such long standing was where the tooth had worked its way into the nasal cavity. So the extraction in this

class of cases should be done with very great care, as it is impossible to know the extent of the caries and the tooth be forced into the antral cavity, by the dentist, which would cause a great deal of inconvenience to both dentist and the patient.—*G. C. Otrich, M. D., Belleville, Ill.*

The Use of One-third of a Rubber Ball as a Face Mask:—

During the administration of nitrous oxide, in a great many cases, especially the dark complexioned ones, it is better or easier to notice the approach of cyanosis by the color of the lips. I have in times of doubt raised the ball to see the lips, while this is all right in many cases, in some of the bad ones the little air they get, in raising the mask, is sure trouble and delays good results. To overcome this, I took a watch crystal about an inch and a half in diameter, and placed it in about the center of one of the thirds of a rubber ball and marked around it. I then cut out a circle of rubber, about three-sixteenths of an inch in diameter, inside of this mark, then sandpapered a space three-eighths of an inch wide outside of this mark and applied vulcanite rubber dissolved in chloroform. After this I placed the watch crystal in position on the outside of the ball with a strip of vulcanite rubber an inch wide, cut the long way and rolled up, I pack around the crystal extending over the bevel and out on the space prepared. After it is neatly packed, I invest and vulcanize at 300 degrees for forty minutes, then take out and clean. Now remove the crystal and replace it by one a little larger, so that it will stretch the rubber tight, through this I can see the lips at all times.—*E. B. Stoughton, D. D. S., Rogers, Arkansas.*

To Have Strength, Hardness and Softness Where Desired in the Same Casting:—For an inlay or crown base to support a bridge, or any inlay needing special strength or hardness, get a model of the tooth with prepared cavity, in Price's Artificial Stone. Bend small platino-iridium wire, so as to lie in those parts of the cavity where strength is necessary and hardness can do no harm. Upon the wire, after shaping, fuse a coating of high grade gold solder, place the wire in the cavity of the stone and construct the wax filling over it. Invest the whole and cast with pure gold.

If temperature of mould and gold are right the gold and solder

form an alloy close to the wire and perfectly fused to it, without affecting the gold at the margins of the inlay where it remains pure, and easy to fit and burnish.

For crown base the solder is fused to the P. I. dowel before waxing. The larger the dowel or wire is, relatively to the mass of gold in the casting, the hotter the gold should be to properly fuse the solder. Overheated gold from the oxyhydrogen blow pipe would be likely to get alloyed too far from the wire, or as far as the margins, which should be avoided.

Softness to allow fitting and burnishing of margins necessary in all inlays, is even more especially necessary in a bridge-pier inlay; while strength and rigidity of the casting should be secured without wasteful enlargement of the cavity and consequent weakening of walls.

With the mold at a low red heat and the gold heated slightly beyond its fusing point by gas-air blow pipe the alloying is likely to be about right, and the contraction of the casting reduced to the minimum if high pressure is sustained.—*IV. C. Gowan, Peterborough, Ont.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

THE TENNESSEE STATE DENTAL ASSOCIATION.

This association will hold its annual meeting in Nashville, June 5, 6, 7, 1913.—C. Osborn Rhea, D. D. S., secretary, Nashville, Tenn.

NORTHERN OHIO DENTAL ASSOCIATION.

The fifty sixth annual meeting of the Northern Ohio Dental Association will be held at Cleveland, June 5, 6 and 7.—C. D. Peck, secretary.

CALIFORNIA STATE DENTAL ASSOCIATION.

The next annual meeting of the California State Dental Association will be held on June 2, 3, 4, 5 in the Hotel Oakland at Oakland, Cal.—E. E. Evans, secretary.

THE NEW EDITOR OF THE WESTERN DENTAL JOURNAL.

Dr. Charles Channing Allen has been selected as editor of the *Western Dental Journal* to take the place of the late Dr. J. P. Root. We bid welcome to Dr. Allen and wish him all success.

NEBRASKA STATE DENTAL SOCIETY.

The Nebraska State Dental Society will meet in Omaha, May 19, 20, 21, 22, 1913. All ethical dentists are invited to attend. For programs or any information address William A. McHenry, secretary, Nelson, Neb.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The Wisconsin State Board of Dental Examiners will convene in Milwaukee at Marquette University on June 16, 1913, at 2 p. m., for examination of applicants to practice in Wisconsin. High school diploma, application and fee of \$25 must be filed with the secretary fifteen days prior to above date. Dental diploma to be presented in advance of examination.—W. T. Hardy, secretary, 422 Jefferson street, Milwaukee, Wis.

ROBBING DENTAL OFFICES.

Here is a description of a man who is robbing dental offices:

Old soldier; Norwegian. Five feet two inches. Weight about 175 pounds. Either begs or tries to get subscriptions to magazine. Hair sandy but gray. Beard, unshaven for about two weeks, same color as hair. Wears spectacles and has several front teeth missing. Gets into reception room and makes a business of taking the purses of lady patients who are careless enough to leave them with their wraps.—L. L. Burroughs.

SUSQUEHANNA DENTAL ASSOCIATION OF PENNSYLVANIA.

The fiftieth anniversary meeting of the Susquehanna Dental Association of Pennsylvania will be held at Irem Temple, Wilkesbarre, Pa., Tuesday, Wednesday and Thursday, May 20, 21, 22, 1913.

The executive committee is composed of the following members: Doctors A. E. Bull, W. E. Davis, T. W. Thomas, B. A. Courtright, A. J. Hefferman of Wilkesbarre, A. B. Miller of Kingston, I. H. Jennings of Danville. All ethical practitioners are invited.—E. J. Donnegan, recording secretary.

TEXAS STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Texas State Board of Dental Examiners will be held in High School Building, Houston, Texas, beginning Monday, June 23, 1913, at 9 a. m. Official application blanks and other necessary information will be furnished candidates upon application to the secretary. All applications, accompanied by the fee, \$25, should be in the hands of the secretary at least five days before the examination. Address all communications to C. M. McCauley, secretary, Abilene, Texas.

NATIONAL DENTAL ASSOCIATION.

The 1913 session of the National Dental Association will be held in Kansas City, Mo., July 8 to 11. The local committee of arrangements have selected the Baltimore Hotel as "headquarters" and made the other necessary arrangements for this meeting. The officers and committees are planning to present an exceptionally interesting program, the details of which, together with the other arrangements, will be presented in later journals.—Frank O. Hetrick, president, Ottawa, Kan.; Homer C. Brown, recording secretary, 185 East State street, Columbus, Ohio.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the state of Illinois will be held at the Chicago College of Dental Surgery, corner of South Wood and West Harrison streets, Chicago, beginning Wednesday, June 4, 1913, at 9 a. m.

All applications, together with the fees, \$26, must be filed with the secretary at least five days prior to date of examination. Address all communications to T. A. Broadbent, secretary, 705 Venetian building, Chicago, Ill.

DEATH OF DR. NORMAN W. KINGSLEY.

Kingsley—At Warren Point, N. J., on February 20. Dr. Norman W., husband of Alma W. Kingsley.

No more noted dentist of New York City has been removed from us than Dr. Norman W. Kingsley. This occurred February 20 at Warren Point, N. J., where he has passed quietly and comfortably his home life for the last few years. The doctor's career in New York has been an eventful one, made illustrious by his unusual ability. He was not only a dentist, but an artist of talent above the ordinary. His inventive genius also has marked his career and his literary ability added to his calling. We have closely followed him up by calls in his little cottage home and felt we were paying a small compliment to his professional life.

We want to say here also to his memory that he has not gone into a country of "Agnosticism," as he has placed himself in his autobiography. The last note received from him tells us that "he has asked forgiveness of God and was awaiting his departure in peace." We say amen to his blessed memory.—DR. G. ALDEN MILLS, New York City.

RECENT PATENTS OF INTEREST TO DENTISTS.

1,026,665—Packing machine for toothpicks and the like. Maurice W. Forster, Dixfield, Me.

1,027,216—Obtunder. Julius B. Sapp, Cleveland, Ohio.

1,028,017—Denture. Leo Greenbaum, New York, N. Y.

1,028,539—Dental crown and backing. Robert E. Campbell, Berkeley, Cal.

1,028,363—Blowpipe. Bernard L. Kissell, Joplin, Mo.

1,028,376—Adjuster for blowpipe systems. Philip C. Miller, Chicago, Ill.

1,028,410—Blowpipe. John W. Whitford, Pontiac, R. I.

1,029,258—Dental mirror. Edward P. Beadles, Danville, Va.

1,029,536—Toothbrush case. Albert H. Flood, Bridgeport, Conn.

1,029,031—Combination burner and blowpipe. Arthur H. Schilke, Wilmerding, Pa.

1,029,149—Platform for dental articulators. George B. Snow, Buffalo, N. Y.

1,029,160—Artificial tooth. Franz Wikner, Vienna, Austria-Hungary.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, solicitor of patents, Fendall building, Washington, D. C.

RESOLUTIONS BY THE MADISON COUNTY DISTRICT DENTAL SOCIETY.

At the regular meeting of the Madison County District Dental Society held in Carlinville, February 5, 1913, a committee was appointed by the president to express the sentiments of this society toward our deceased member, Dr. Thomas Western Pritchett.

It has been the lot of but few men to round out so long a life of usefulness and complete as grand a career as has Dr. Thomas Western Pritchett. Having a patriotic spirit, he enlisted in the Civil War and devoted three years of his life in the defense of his country. At the close of the war he returned to Illinois and entered the dental profession for his life work. During his long professional career he has been diligent and constant, always seeking after knowledge.

As our friend and co-worker Dr. Pritchett has gone from labor to rest and each member of this society feels a sense of personal bereavement. Few dentists in the state were more widely known than Dr. Pritchett, and none was more loved by friends and acquaintances. We shall miss him. He was faithful to his obligations in all relations with his fellow men; he was kind, helpful, enthusiastic, sincere and at all times the honorable gentleman.

When the history of dentistry of this, his native state, is written the name of Dr. Pritchett will not be forgotten.

A copy of these our most sincere expressions of esteem for our departed friend we forward to the two sons who survive him, to the White Hall Republican and to one or more dental journals.—C. C. CORBETT, J. M. BARCUS, H. K. BARNETT.

THE TAGGART CASE.

IN THE COURT OF APPEALS IN THE DISTRICT OF COLUMBIA.

Washington, D. C., February 25, 1913.

George W. Boynton, Appellant,	}	No. 2436
vs.		
William H. Taggart, Appellee.		

After an exhaustive review of the testimony in the case the court rendered its decision as follows:

"The real question which we are called upon to determine from the evidence before us is whether the various dentists who have testified or any of them were in possession more than two years prior to the date of the original application for this patent of the idea attempted to be covered thereby and whether they or any of them gave expression of that idea in a practical and public way. It is of no possible consequence that by the use of Dr. Taggart's machine gold inlays and the like may be produced more cheaply and rapidly than they were produced by dentists who have testified. It is enough if those dentists took a wax impression in the manner described by these claims and formed a mold around the pattern thus obtained for the purpose of casting a dental inlay or the like. To hold that this was not done would be arbitrarily to disregard and set at naught the testimony of witnesses whose

character and reputation are unimpeached and whose testimony is reasonable and in entire harmony with the circumstances of this case. We are unwilling to assume such a position. We are fully persuaded that the evidence shows beyond a reasonable doubt that for many years prior to the filing of the original application herein the process of making patterns and molds for dental inlays and the like, as expressed in these claims, had been publicly practiced upon many occasions. This finding avoids the patent and renders it unnecessary to determine whether the claims thereof were anticipated by the prior record art.

"It follows that the decree must be reversed, with costs, and the cause remanded with directions to dismiss the bill."

Reversed and remanded.

(Signed) CHARLES H. ROBB, Associate Justice.

THE SCIENTIFIC FOUNDATION FUND AND ORAL RESEARCH CAMPAIGN.

The establishment of the scientific foundation fund and oral research campaign of the National Dental Association is being met by an almost landslide of professional support and endorsement. This is in part evidenced by the very liberal subscriptions made immediately upon the presentation of the plan. For example, when the work was presented by request before the Cincinnati Dental Society on January 24 every member present contributed, making a total exceeding \$2,500 or \$500 a year for five years, also when presented to a group of twenty dentists in Cleveland on January 28, fifteen just ordinary dentists pledged \$2,000 or \$400 a year for five years. The full subscription from the society is not taken as yet.

The number and urgency of the invitations from other places desiring to have the plan and the work presented there indicates that the spirit of the profession is at this moment intense to provide by means of a general co-operation, for the bread and butter problem of some competent men that thereby they may enable them to devote their entire strength and undivided attention to the solving of some of the urgent oral and dental problems that humanity and the dental professions are crying for a solution of.

Dr. Charles Mayo in closing his splendid paper before the recent dental meeting in Chicago, January 31, under the auspices of the Chicago Dental Society, made the statement that "it is evident that the next great step in medical progress in the line of preventative medicine should be made by the dentists. The question, is Will they do it?"

It is a remarkable fact that this group of oral diseases which afflict a larger percentage of humanity than any other and which cause more total suffering directly and indirectly than any other should have had probably the least provision made for its competent exhaustive investigation aside from the private effort and independent sacrifice of individuals who did it at night after a day of exhaustive professional toil. Practically all of the great epoch-making advances in medical science have been the result of definite laboratory research and were only made possible by money being made available by a professional spirit back of it that was determined to know the unknown for the betterment of suffering humanity.

The eagerness to support this work financially, not as a mere sense of duty but rather of privilege, scarcely exceeds the willingness of some of our best scientific institutions to place at the disposal of the National Dental profession the free use of their laboratories and equipment in order that humanity may be the most speedily helped.

The committee has already had placed at its disposal free of expense facilities and equipment sufficient for a large staff of workers and these with an environment of experienced experts for consultation which money alone could not procure. The committee has found also to be available some of the best qualified men in the various branches of oral and dental science,

many of whom have an international reputation and whose hearts are known to the profession to be deeply devoted to the solution of these various great basic problems. All that is needed to bring this large group of earnest competent men and these proffered laboratories together, is an equivalent of \$1 per year for five years from each member of the dental profession of the United States. Very many cannot readily be reached, so it is probable that one-fifth of the dental profession will have to carry the expense at first which, however, will mean only \$5 per year for five years and thus pay the dollar for the others who cannot be reached.

In the places named many are offering to take the shares of twenty-four or forty-nine others besides their own \$1 share.

A host of our profession have been longing and wishing for a way to do this seemingly imperative work for their profession and humanity, but which they had not the time, the facilities nor the money to do themselves. Now by uniting our little but universal effort we can with a very few cents each per year provide for the maintenance of an expert investigator, including his competent assistants, all working in one of these fine, well equipped laboratories and any of these many basic problems can there be attacked for a few cents from each of us.

The committee has available already all requisites *except the money* for studying exhaustively the following problems, dental caries, its cause and prevention and means for its immunity; pyorrhea alveolaris (so called) and all periodontal affections; systemic and distant infections having their origin in the mouth; erosion, its etiology and prevention; enamel atrophy, its cause and prevention; the metallurgical and physical problems, such as substitutes for platinum and iridio-platinum; dental alloys and amalgams; the physics of bridge construction and orthodontia, etc., etc. When this work is under way it will naturally be reported quite regularly through the National Dental Journal.

The committee has implicit confidence that ample endowments can be secured during the five years to make the work permanent and extend and very much enlarge it.

This committee was created by the National Dental Association for organizing this new department and for the securing of the funds for its maintenance and they expect to have a liberal fund available by the time of the national meeting in July at Kansas City and will report for endorsement its progress and available facilities for proceeding with the work and will ask for a commission to be selected by that body who shall assist in the great responsibility of establishing the work. This work does not in any way conflict with the special work being done by individuals at their own expense under the direction of another committee.

The funds are safely guarded by being deposited with a trust company, the chairman of the committee is under bond and moneys can only be drawn over the endorsed voucher of the general secretary of the national. The committee has provided for a duplicate set of records of all payments to the fund to be kept by the general secretary of the national association.

Every organized dental society, city, county and state should appoint a local committee on scientific foundation fund and research with a local treasurer who shall receive, receipt and forward all subscriptions to the national chairman, who will also receipt for the funds as received. The subscription forms are designed for a card system of bookkeeping and furnishes the following: A subscription form with provisions for receipting yearly payments on the original, the national chairman's receipt, the local treasurer's memo card for recording annual payments on pledges, a form to be sent to the national general secretary for his duplicate record, the local treasurer's receipt and the local treasurer's remitting memo.

The subscription forms will be furnished by the national chairman on

application, also printed matter carrying all endorsements and earnest pleas from some of the noblest men in the profession, also a brief statement of the purpose of the plan for the work.

Will you help the dental profession establish this exhaustive oral research and thus have as a profession the credit for the work, the control of the work and the consciousness of fulfilling in part our great obligation to society? If so please send for subscription blanks and get busy at once.—Weston A. Price, chairman Scientific Foundation Fund Committee, 10406 Euclid avenue, Cleveland, O.

NATIONAL MOUTH HYGIENE ASSOCIATION.

Dear Doctor: We want \$5 now and \$1 each year thereafter. We want it to do for you and the dentists in your community what they cannot do so well for themselves, no matter how hard they work or how much money they spend. We mean business and good business, too.

As the "keeper" of the "gateway" to the human system you are entitled to the same position and consideration that is given the best physician in your locality. Have you got it? If not, why not? Do you want it? If so, it is up to you.

You are a member of state and local dental societies. That is as it should be. If you were not this letter would not be addressed to you. Just stop and consider how much it costs you each year in time and money to attend these dental society meetings. It costs something, doesn't it? Mighty good investment, though. Sort of post-graduate courses which prepare you to meet the people and give them the best that the profession has to offer. The organization which we represent prepares the people to meet you and to seek that which you have spent so much time and money in preparing yourself to give them. Dental societies do not bring the people to you. The National Mouth Hygiene Association does. Dental societies educate you. The National Mouth Hygiene Association educates the people. Not to be a member of a dental society is an injustice to your patients. Not to be a member of the National Mouth Hygiene Association is an injustice to yourself and to the people in your community. You are spending quite a sum of money each year in keeping yourself prepared to serve the public. We are asking you to give us a small portion of that amount in order to enable us to prepare the public to meet you.

We are making an effort to secure 5,000 dentists as charter members of the National Mouth Hygiene Association and to do it within the next ninety days and we are asking you to be one of these, doctor.

Five thousand charter members will give us \$25,000. As soon as we secure that many charter members we are going after the rest of the ethical profession and the public with a view of securing 100,000 additional members at \$1 each. This will give us over \$125,000. Quite a sum of money, isn't it? Well, we are prepared to make good use of it in research and publicity work. In fact, we need many times this amount and are going after it, expecting to get it from philanthropic sources as soon as the dental profession has done its part in this great campaign.

During the past four years we have raised and spent something over \$20,000 in research work and in securing material and preparing for a mammoth educational campaign. Up to the present time most of the time and attention has been devoted towards preparing the dental profession to do its part in this campaign. With the exception of the teaching profession practically nothing has been done to educate the general public, and yet, doctor, the result of this campaign has been felt in your community. Most of this money has been spent in conducting experiments, securing statistics and the distribution of literature among members of the dental profession

and public officials with a view of securing co-operation and support from these people in our educational campaign.

We are sending you a letter, signed by the board of governors, which tells you some of the things that have been accomplished to date and gives some of the plans for the future. We have the leading oral hygiene men of the country with us, and back of us we have the United States government officials, who are interested in questions of hygiene, a number of whom have promised their co-operation in research work. This opens the great experimental laboratories of the United States to our work.

Boards of education, school superintendents and the teaching profession of the country in large numbers are seeking information at our hands.

We are ready to go before the people on a large scale, but it takes money to do big things. Five thousand dentists spending ten times the amount of money for which we ask individually or independently cannot accomplish one-thousandth part of the good that can be accomplished by the same number of people in an united and concentrated effort through a non-professional organization like the National Mouth Hygiene Association.

Do you know that it is claimed that the various societies for the prevention and cure of tuberculosis in this country raised and spent \$14,000,000 the past year? Do you know that down to the present but little attention has been given the mouth in preventing and treating these cases? Do you know that more than \$14,000,000 will be spent this year by these societies and that much of it would be spent in the interest of mouth hygiene if these organizations were aware of the important part the mouth bears in the prevention and treatment of this dreaded disease? Do you know that the National Mouth Hygiene Association is prepared to furnish the evidence and indisputable proof which will induce these societies to turn much of the \$14,000,000 into teaching *care* and *use* of the human mouth?

Well, these are facts and facts well worth considering. We are not only prepared to go into the tuberculosis camps and hospitals and show the actual conditions of the patients' mouths, but are prepared to go into these camps and hospitals and by correcting faulty conditions and teaching the proper *care* and *use* of the mouth produce results more astonishing than those obtained through the Marion School experiments. We are prepared to do this under the most rigid inspection and closest observation of national and local officials. All we need is the money. Are you willing to contribute your \$5 to this cause?

Another imperative reason why the dentists of this country should unite with the National Mouth Hygiene Association is the fact that in the near future there will be created a new department of public health in connection with the United States government. When that department is formed the dental profession should be given special recognition and consideration. A bureau should be established devoted to the study of those things which deal especially with the mouth and that bureau should be administered by members of the dental profession. To obtain this we must have prompt and active co-operation on the part of the dentists of this country through an organization whose policy and purpose it is to bring about a condition which will enable it to exert sufficient pressure to bear upon the members of Congress to secure the recognition due the dental profession. To accomplish this we must not only have the dental profession back of this movement, but must have hundreds of thousands of laymen active or in sympathy with us. If the dental profession does its part the National Mouth Hygiene Association will secure the laymen contingency.

As we said in the beginning, we mean business and good business, too. Send us \$5 for charter membership and give us an opportunity to do for you the things you cannot do so well for yourself and the people in your community.

There are three kinds of men in the profession—"boosters," "knockers" and "dead ones." You have been classed as a "booster" and we beg of you to "boost" now as you have never "boosted" before. We need your name influence and money; but above all we need your name and influence *now*. Fill out the enclosed application post card and mail *at once*, sending the money at your convenience; we will want it later. We want your name for membership and your influence *now* in obtaining our 5,000 charter members within the next ninety days.

We need you and you need us if the best interests of both the profession and humanity are to be served properly.

Fill out the application and send us the names of others whom you know that may be interested and aid in "boosting" for the good of the profession and humanity.

W. G. EBERSOLE, Secretary-Treasurer.

OBITUARY.

DR. D. R. STUBBLEFIELD.

Dr. Stubblefield died at Nashville, Tenn., on March 12, 1913, after a long illness.

He was born at Jasper, Tenn., in 1856, and was educated at Emory and Henry College, Virginia. In 1876 he received his B. A. degree and on account of his excellent work was conferred with an A. M. degree. He was graduated from the medical department of Vanderbilt university in 1878 and from the dental department of Vanderbilt in 1883. In 1879 he was elected to the chair of anatomy and physiology of Vanderbilt university, when that department was organized. He practiced medicine for several years until the spring of 1883, when he changed to the practice of dentistry.

Following his graduation in dentistry, Dr. Stubblefield was elected president of the Tennessee Dental Association and subsequently became president of the National Institute of Dental Pedagogics.

In 1900 he was elected dean of the dental department of Vanderbilt university and held that office until he was forced to retire on account of his health. Altogether he was connected with the university for thirty years of continuous service.

He married Miss Hettie Wilkins of Nashville, who with three sons and one daughter survive him. The children are as follows: D. R., Jr., of Altoona, Pa.; D. D., of Niagara Falls, N. Y.; George Stubblefield of Nashville, and Mrs. Harding Jackson, also of this city. Dr. Stubblefield also leaves three brothers and one sister, and his mother.

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, MAY, 1913.

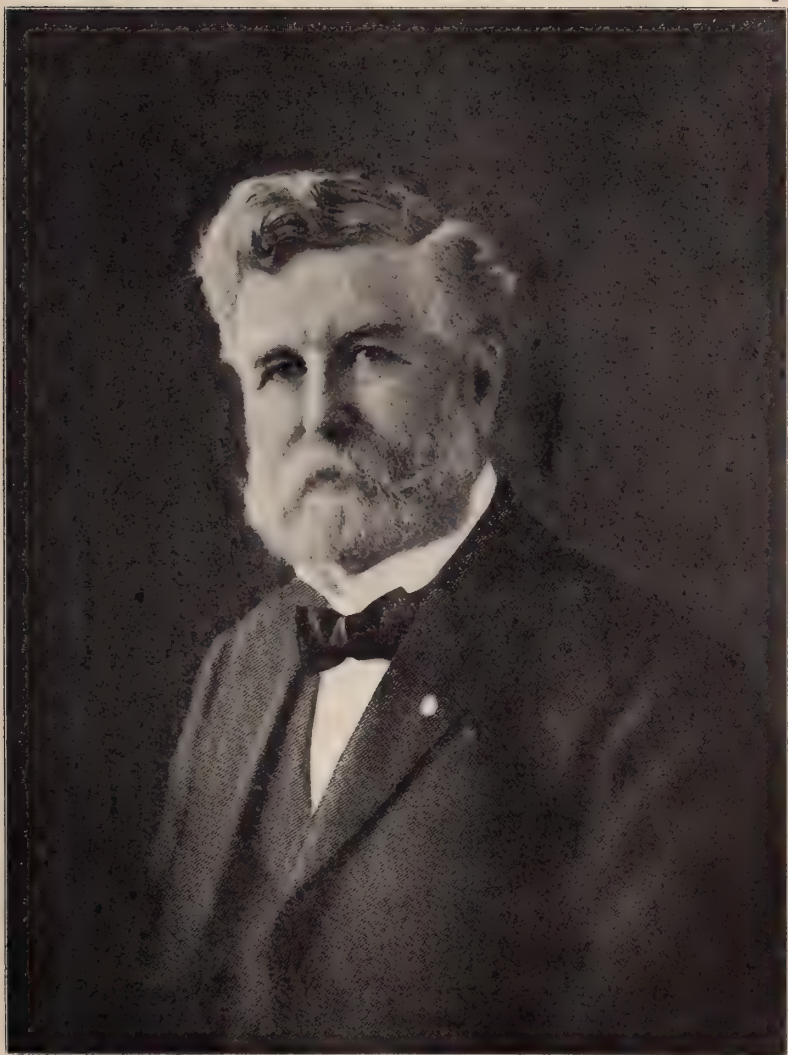
No. 5

TESTIMONIAL BANQUET TO TRUMAN WILLIAM BROPHY, M. D., D. D. S., LL. D., BY THE CHICAGO DENTAL SOCIETY, SATURDAY EVENING, FEBRUARY 1, 1913, AT HOTEL LA SALLE, CHICAGO.

The following is an epitomized biography of Dr. Brophy:

- | | |
|---------|---|
| 1872 | D. D. S. Pennsylvania College of Dental Surgery. |
| 1880 | M. D. Rush Medical College. |
| 1894 | LL. D. Lake Forest University. |
| 1848 | Born April 12th, at Gooding's Grove, Will County, Illinois. |
| 1852 | Family moved to St. Charles, Illinois. |
| 1855 | Moved to a farm in township of Campton, Kane County, Illinois. |
| | Attended country school in "the old log school house." |
| 1862-3 | During winter attended school in the village of Blackberry, now Elburn, Illinois. |
| 1863-4 | Attended Elgin Academy. |
| 1864-5 | Attended Elgin Academy. |
| 1866 | Family moved to Chicago. |
| 1867 | Began the study of dentistry in the office of Dr. J. O. Farnsworth at 116 Randolph St., between Clark and Dearborn. |
| 1867-9 | Attended Dyrenforth's College of nights from April 1, 1867, to June 1, 1869. |
| 1869-70 | Attended Chicago Athenaeum of nights during winter. |
| 1870 | Took charge of Dr. Farnsworth's practice. |
| | Purchased office of Dr. Farnsworth in October. |
| 1871 | Burned out in great Chicago fire. |
| | Joined the Chicago Dental Society. |
| 1876 | Joined Illinois State Dental Society. |
| | Delegate from Illinois State Dental Society to American Dental Association. |

- 1877 First important dental paper: "The Treatment of Exposed Pulp," before Illinois State Dental Society.
Member Committee Chicago Dental Society appointed to confer with committee from Rush Medical College on organizing a dental college.
- 1880 President graduating class of Rush Medical College.
Elected Professor of Dental Pathology and Surgery, Rush Medical College.
- 1881 Member legislative committee of Chicago Dental Society, which drafted the bill which became our first state dental law.
Took the initiative to organize the Chicago Dental Infirmary, which subsequently became the Chicago College of Dental Surgery; corresponding secretary of Chicago Dental Infirmary.
President Chicago Dental Society.
- 1883 President and Dean of Chicago College of Dental Surgery, and Professor of Oral Surgery.
Proposed and took initial steps to organize Section on Dental Surgery, American Medical Association.
- 1886 Made first operation for immediate closure of congenital cleft palate in young infant, before class.
- 1890 Purchased lot for Chicago College of Dental Surgery.
- 1890-1910 President Commission of Education, International Dental Federation.
- 1891 President Illinois State Dental Society.
- 1893 Chairman Section Oral Surgery of Columbian Dental Congress.
Erected north half Chicago College of Dental Surgery building.
- 1896 Wrote chapter on Early Operations for the Closure of Cleft Palate, Roswell Park's Surgery.
- 1897-8 President National Association of Dental Faculties.
- 1900 Delegate from American Dental Association to First International Dental Congress in Paris.
- 1902 Member National Swedish Dental Association.
Medal "Homenaje al Talento" from Professor Dr. J. J. Rojo, of Mexico City.
- 1903 Medal for "Merited Distinction" from Odontological Society of Paris, France.



Freeman W. Brophy

- President for the United States of the Fourteenth International Medical Congress at Madrid, Spain.
- 1904 Delegate for the United States to Fourth International Dental Congress, St. Louis.
- 1906 Awarded Fellowship Medal by the Dental Society of the State of New York.
- 1910 President Commission of Education, International Dental Federation.
- Chairman American Delegation to Fifth International Dental Congress, Berlin.
- 1912 President Chicago Dental Faculties Association.
- Member—
- Odontological Society of France.
 - Association of Military Surgeons of the United States.
 - Surgical Staff Passavant Hospital.
 - Surgical Staff Provident Hospital.
 - Surgical Staff Presbyterian Hospital.
 - Illinois State Medical Society.
 - Chicago Medical Society.
 - Chicago Odontological Society.
 - Chicago Medico-Legal Society.
 - Chicago Pathological Society.
 - Society of Medical History.
 - Honorary Member Society Austrian Dentists.
 - Honorary Member American Dental Society of Europe.
 - Sociedad Dental Mexicana.
 - President Chicago College of Dental Surgery.

To Dr. Truman William Brophy:

GREETING—The Chicago Dental Society has the honor to present to you this copy of the following resolutions, which were presented to the society by Dr. Arthur D. Black:

“Whereas, with the progress of civilization, there have appeared in every walk of life men who, by their energy and devotion to their work, have become leaders among their fellowmen; and

“Whereas, there is in the dental profession a man who has

been a material factor in the uplifting of his profession and in alleviating human suffering; and

"Whereas, it is fitting that his co-laborers and friends should pay tribute to such a man, and take pleasure in acknowledging to him while living their appreciation of his life of service to and for the profession; therefore be it

"Resolved, by the members of the Chicago Dental Society, in regular session on Tuesday, May twenty-first, nineteen hundred twelve, that the president of this society be directed to appoint a committee of five members who shall arrange for a banquet to be given on Saturday evening, February first, nineteen hundred thirteen, in honor of our distinguished fellow member, Dr. Truman William Brophy."

This resolution was unanimously adopted and ordered to be spread upon the records of the society on Tuesday evening, May twenty-first, nineteen hundred twelve.

JAMES H. PROTHERO, *President*.

THOMAS L. GRISAMORE, *Secretary*.

The testimonial banquet given to Dr. Brophy under the auspices of the Chicago Dental Society was attended by prominent dentists and physicians from many of the cities in America, the Dominion of Canada, as well as from European capitals, as will be seen by reading the proceedings.

Flags of many nations festooned the great ball room of the hotel. Five hundred and one participated in the festivities. It was a notable gathering. Great enthusiasm and good fellowship characterized the proceedings from the beginning to the end. A distinguishing feature of the dinner was the presentation of gifts by special messengers from many lands and from dental and scientific societies in this country and in Europe. These gifts will be mentioned in the stenographic report of the proceedings in the order in which they were presented.

A partial list of the writings of Dr. Brophy was presented to each guest in a pamphlet of 44 pages.

Dr. James H. Prothero, president of the Chicago Dental Society, at 9:50 p. m. rapped for order, and when quiet was restored, spoke as follows:

LADIES AND GENTLEMEN: The Chicago Dental Society has

arranged this program in honor of one of its most distinguished members, Dr. Truman W. Brophy.

It is with pleasure that we are assembled here tonight to greet him, and in this manner pay a tribute which in a measure will indicate our appreciation of his friendship and professional attainments. He has been a member of this society for more than forty years, and during all that time he has been a potent factor in its growth, development and progress. Our honored guest, by his own personal efforts and sacrifices, has done much to spread the fame of American dentistry and of Chicago as a seat of dental learning, through many countries of the Old World.

We are happy to render him this slight tribute of our appreciation while he is still with us, and in the full vigor of his health and mental faculties. This testimonial banquet, although planned nearly a year ago, has required much thought in the development and execution of details. These have not been accomplished by any one man. Several committees were appointed, and they have devoted a great deal of time and attention to the work in detail, and the proposition as a whole. Two committees in particular I desire to mention—the committee on clinics, the success of whose efforts has been plainly apparent in the sessions of the past two days, and the committee on banquet, the results of whose efforts you see here tonight. You can judge for yourselves how efficiently the work has been planned and executed.

In partial recognition of the eminent service he has rendered, Dr. Arthur D. Black, the chairman of the banquet committee, has been appointed toastmaster for this occasion. (Applause.)

There are many speakers to be heard from tonight, and in order that all may be favored in hearing what they have to say, we request that you keep as quiet as possible, and in this manner assist in carrying out the program.

I take great pleasure in presenting Dr. Arthur D. Black, chairman of the banquet committee, toastmaster for the evening. (Applause.)

THE TOASTMASTER: Mr. President, Dr. Brophy, Ladies and Gentlemen: We are gathered here tonight to pay tribute to the work of one of our confreres, and a few have been selected to tell something of our thoughts and feelings. Without disrespect to those who will speak, I call attention to the fact that

the greatest tribute of this occasion is not the words which will be spoken, but rather the presence here of so many men who have come because of something which they have received in days more or less remote, and which has led them to seek the pleasure of being here. Years, many or few, as students, as associates or co-laborers, have brought each of us into contact with this man, with the result that we have felt the desire to seize this opportunity to show him our appreciation of the benefit of that relationship. I imagine that after Dr. Brophy has forgotten the exact words which any of us will have said tonight, there will linger in his mind the picture which is now before him.

It is a pleasure to all of us, I am sure, to have the opportunity of testifying to the work of this man in our profession, while he is yet a vigorous active man among us, and I hope it will be an inspiration to him throughout the remaining years of his life to push forward with more energy than ever those things which look toward the advancement and uplifting of the profession.

It occurs to me, as I know it must have occurred to the guest of the evening, and doubtless to many of those present, that there is something especially fitting that such a testimonial should be tendered to a man by the members of his own society, his own city, those with whom he has been associated throughout his professional career, and, in fact, throughout almost his entire life. Many receive honors, to which they may be justly entitled, when in a far city or country, but few receive the merited plaudits of their neighbors and friends at home.

There grew up in the Illinois State Dental Society before the days of most of us, and has existed there ever since, a spirit of co-operation and friendliness which has come to be the greatest asset of the profession in this section for effective work. In the days when our guest was young in the profession there already existed the spirit which was expressed by Father Smyth, Catholic priest, dean of the clergy of Evanston, a few years ago at a meeting of the Men's Club of St. Mark's Episcopal Church to welcome a new rector. Many of the clergy of Evanston, representing churches of all denominations, were present, and Father Smyth, in the course of his remarks, said that he was glad the time had come when many ministers and members of the congregations of the various churches "had ceased to hate each other for the love of the Lord."

It has, therefore, come to pass that most of whatever progress has been made, and of whatever good has come to the people of this community, through the efforts of the members of the dental profession, has been the result of the spirit of good fellowship which has been ever kept burning brightly among us.

Good fellowship, friendliness and close association serve to establish confidence, which is the cornerstone of steady and satisfactory progress. May I express the hope that this banquet will be not only an expression of our indebtedness to the guest of the evening, but that it will do more than that besides; that it will be the means of cementing together more closely than ever the members of our profession, not only in Illinois, but throughout the entire world.

I have brought with me a few telegrams which I want to read to you.

"Please accept my heartiest congratulations and good wishes on the occasion of the complimentary banquet to be tendered to you on February 1st. I only wish it could be my good fortune to be present on this happy occasion, but alas this is impossible. I trust you may have a most enjoyable evening."—H. Cameron R. Stewart, Grosvenor Square, London, England.

"I congratulate you on being the recipient of such an expression of their admiration and respect and of their appreciation of the long and valuable service which you have rendered to the profession of dentistry and to the whole community. It would have been a great pleasure to me to join the representatives from this city, where in professional circles your name and work are so familiar, but at my age (I have passed the three score and fifteen) prudence forbids. I trust you may be long spared to enjoy the confidence and esteem of those with whom you have been so long and so pleasantly associated."—J. B. Willmott, Toronto, Canada.

"The compliments of the Chicago Medical Society are extended to Dr. Truman W. Brophy on the occasion of the banquet tendered to him by the dental profession."—P. J. H. Farrell, Secretary.

"I am enchanted that, owing to my proposal, which was ardently seconded by Docent Dr. von Wunschheim and Dr. Zsigmondy, you have unanimously and with enthusiasm been appointed honorary member by the Association of Austrian Dentists in their general assembly of 13th of November, 1912, in consideration of

your great scientific and social merit on behalf of surgical dentistry, and on the occasion of your birthday. Allow me, my worthy friend, to express my own and my family's most sincere felicitations and kindest wishes on the occasion of this festival."—Rudolph Weiser, Wien.

"On this memorable day of yours, the Hygiene Committee of the International Dental Federation shall not certainly fail to congratulate you. Though we cannot attempt the task to bring into prominence your merits for our science as well as for our profession, yet we know that you have always been attentive to our exertions with the greatest interest, and therefore we beg you to join our managing committee as honorary president. Believe us, dear sir, with the expressions of our special kind wishes and heartiest congratulations." Dr. C. Van Der Hoeven, Strassburg.

"It is a great gratification to receive an invitation from the Chicago Dental Society to attend the banquet to be given in your honor on Saturday, the first of February. On that date I expect to be in Maryland, where I am scheduled to preach, so I am unable to attend the gathering that recognizes your work and your services. Allow me, however, in this note to express the profound regard and the warm affection I have cherished for you from the first years of our acquaintance. You have lived industriously, helpfully and inspiringly. You have adorned every post of duty that has been assigned to you. You have been a direct and large contributor to the welfare of society and the upbuilding of every beneficent cause. I am sure that those who gather about you at the dinner will one and all entertain real love for you, and will ask God to bestow upon your life for many years to come the strength and joy of His presence."—James G. K. McClure, Chicago.

"Greetings from the sunny southland, the land of oranges and the big Roosevelt dam. Sorry am unable to meet with you. It affords me pleasure to unite with the old class of '89 in wishing you may be spared for many years of usefulness to the dental profession."—F. V. Woodward, Phoenix, Arizona.

"The faculty of the College of Dentistry, University of Southern California, join me in wishing you a long life, health, and happiness, and only distance prevents us from being present and personally paying our respects to one whom we hold most dear."—L. E. Ford, Dean, Los Angeles, Cal.

"Regret that sickness makes it impossible for me to join the Chicago Dental Society in honoring Dr. Brophy. I had hoped by my presence to show in a slight degree the high esteem and love we in the South have for Dr. Brophy, and hereby extend my heartiest congratulations and general greeting on this happy occasion."—J. C. Watkins, Winston-Salem, N. C.

"It is with regret that I find myself unable to be with you to assist in doing honor to Dr. Brophy, whom I look as being second to none in achievement for humanity. I trust those present will make him realize something of the love we all bear him."—Ray D. Robinson, Los Angeles, Cal.

"Illiness prevents my attending the Brophy banquet. Remember me kindly to Dr. Brophy and congratulate him heartily, or rather congratulate the medical and dental professions because they have a Doctor Brophy."—M. H. Fletcher, Cincinnati, O.

"We can't all be there, but we love you in the same old way. Most hearty congratulations and best wishes for many happy and useful years."—J. A. Wells, Shawnee, Okla.

"The alumni of this city unite to extend heartiest greetings to you on this festal occasion. They would express the wish that the years of your activity may still be many to the inspiration of many a student, to the benefit of the profession at large, and to your own joy and peace."—F. J. Powell, P. A. Riebe, R. Lyon, A. H. Lemke, J. H. Stockwell and J. H. Kolter, Wausau, Wis.

"St. Louis Dental Society extends heartiest congratulations and best wishes for long and continued health and prosperity."—Otto J. Fruth and G. B. Winter, St. Louis, Mo.

"Please permit me with profound respect and deep regard to offer to you my warm and sincere best wishes on this auspicious occasion. I am proud of the Chicago College of Dental Surgery, and especially proud of having you as a teacher. It is for that reason I claim a special right to express to you those sentiments of esteem and affection which the western coast feels in common with those of the dental and medical world."—J. L. Pease, Oakland, Cal.

"Best wish for a successful evening. I wish I could be with you to help make it enjoyable and hear the just praise of the best father living."—Truman, Coronada, Cal.

"Greetings to Dr. Brophy. May time be a store of bliss beyond the wealth of fame."—Henry W. Morgan, Nashville, Tenn.

"When you are through with soups and salads, and the fruits have all been passed; when the coffee cups are empty and the wit is being smashed; when the smokes have all been started and the skies a little hazy, just say that in Nebraska there's a chap that's gone clean crazy, for he's standing on the table yelling Hooray, Hooray, Hooray for the dear old Alma Mater and Pa Brophy."—C. S. Parker, Norfolk, Neb.

"It is the disappointment of my life that I shall not share with your friends the joy of honoring you for your great service to dentistry and many charming personal qualities. God bless you, and give you contentment in the reception of these appreciations of your friends and co-workers."—B. Holly Smith, Baltimore, Md.

"Kindly express to Dr. Brophy my regrets at not being able to attend the banquet given in his honor. His work in our profession has been of great benefit to us all, and in honoring him we are honored in return."—Charles P. Pruyn, Los Angeles, Cal.

"All honor to the Master. Deep affection to the man."—Signed, Isaac Davenport, Paris, France.

"Heartiest congratulations and best wishes."—Thomas, Vienna, Austria.

"Warmest sentiments of esteem and deepest appreciation."—Jessel, Stockholm, Sweden.

"Sincere congratulations on admirable career and devotion to dental science interests, heartfelt wishes, long life and prosperity."—Swiss Odontological Guye, Genevesuisse.

"Our kindest regards to you and other friends assembled in your honor, and regret inability to be present."—Mitchells, London, England.

"Health and long life to dear Brophy."—Daboll, Paris, France.

"Heartiest greetings from American Dental Society of London."—J. McDermid, London, England.

"Best wishes for a glorious evening to your guest."—Burne, Sydney, Australia.

"Brophy banquet greetings from Miller Club, Berlin."—Bödecker, Berlin.

"Accept the felicitations and good fellowship of Los Angeles Auxiliary Delta Sigma Delta Fraternity, many of whom know you

personally, and all of whom recognize and appreciate the good man and dentist that you are.”—Signed by thirty-three members of the Fraternity.

“May joy be unconfined at the Brophy dinner. Loving congratulations to the guest of honor. My convalescence is retarded and I can’t come in consequence.”—B. Holly Smith, Baltimore, Md.

“They say us Mormon boys ain’t got no style, but just the same I am instructed by that same Mormon bunch to extend the greetings and best wishes on this happy occasion to the noblest Roman of them all, our beloved brother and professor. Health and happiness to you.”—A. C. Wherry, Salt Lake City, Utah.

“I drink to the health of your honored guest. Long live Dr. Brophy. May his good work live on forever.”—William Lew, St. Petersburg, Russia.

“We send our greetings to Dr. Truman W. Brophy, and regret our inability to be present at your banquet. We Chicago College of Dental Surgery boys from Spokane send Dr. Brophy our best wishes and hope his future will be as bright and beneficial as the past.”—Robert Bell, Horton F. Kimball and George Horley, Spokane, Wash.

“Felicitations and best wishes go out to you this evening from thousands of old students in all parts of the world. Our profession honors itself in commemorating your long and inestimable services. The world is grateful for the blessings which your attainments and industry have bestowed upon it. The example of a noble personal life, the precepts of a profound scholar, and the achievements of a great organizer are a daily inspiration to your former students and others alike. Your life and work mark an epoch in dentistry and have made of our Alma Mater an ideal for others to follow. Please accept congratulations offered in reverence and gratitude by an old student present in spirit with you this evening.”—J. P. Harper, St. Louis, Mo.

“Congratulations to Dr. Brophy and best wishes to all. Sorry we can’t be with you.”—James McManus, Charles McManus and Henry McManus, Hartford, Conn.

“Congratulations from one who has served with you in the organization of the American Dental Association, the Faculty Association, the Institute of Pedagogics, the Federation International Dentaire, and who has traveled with you in almost every city of

Europe and America. God save you for further usefulness."—Dr. H. A. Smith, Cincinnati, O.

"In the name of the Italian dentists, I present to you, on the occasion of your birthday the expression of their high admiration for your professional achievements and of their gratitude for the most important contributions you have brought to the progress of dental and oral science.

"As a token of their sentiments towards you, the Italian dentists offer you on this occasion a commemorative parchment and a gold medal with your effigy, wishing to testify in this manner to yourself and to your compatriots the high esteem which they, like the professional men of all countries entertain for you.

"You belong to that scarce number of men who honor and benefit mankind by their deeds, and for whom an endless life would be to desire. The Italian dentists wish you therefore health and happiness for as long a period of time as is compatible with natural laws."—V. Guerini, Naples, Italy.

Letters, telegrams and cablegrams were also received from the following, extending their congratulations and good wishes to Dr. Brophy:

Schaeffer-Stuckert, Frankfort, Germany; W. G. Ebersole, Cleveland, O.; Professor Doctor G. Cavallarey, Italy; Dr. Maurice Ray, France; Carl Rose, Dresden; A. W. Fossum, Aberdeen S. D.; Mark E. Vance, Lincoln, Neb.; B. C. Campbell, Lake Geneva, Wis.; Fred W. Rose, Cooperstown, N. D.; R. Boyd Bogle, Nashville, Tenn.; W. E. Tucker, Lena, Ill.; John W. Loppenthien, Ludington, Mich.; H. E. Fox, Ironwood, Mich.; S. Snow Smith, London; Hultgren, Stockholm, Sweden; Baron Richthoden, Kuhnern; Dieck, Berlin, Germany; Spring, Dresden; Jessen, Strassburg; Roussel, Paris, France; Hartley, Dresden; Heide, Paris, France; Godon, Paris, France; Whitney, Honolulu; Rupprecht, Dresden; Martin, Berlin; Davis, Berlin; C. L. Bingham, Chicago; letter from Amsterdam, signed by fifteen of the graduates of the Chicago College of Dental Surgery; N. A. Thometz, Calumet, Mich.

"The direction and redaction of the 'Odonto-Stomatologia' present their best compliments to Dr. Truman W. Brophy on the occasion of his birthday, and express the wish that his precious life may long be preserved to dental and oral science, to the admiration of the professional world and to the affection of his friends."—Dr. V. Guerini and Dr. Gustavo Kessel.

"The German dentists send their most hearty greetings as colleagues to Professor Truman W. Brophy.

"The fellow members of your profession in your home land have united themselves to demonstrate by a fitting festive occasion their recognition and love for you as a leader in the scientific and practical lines of the dental healing art.

"We dentists here in Germany also wish most ardently to improve this fine opportunity to present to you, our highly esteemed colleague, our heartiest greetings on this occasion.

"We prize and admire in you not only the leader, teacher and practitioner, not only the skilled surgeon who has so successfully discovered new ways in operative methods, not only the energetic leader in the international effort for the advancement of our noble profession in social, scientific and practical relation, but we also love in you the man, the inner personality which has won for you during your repeated visits to Germany our lasting appreciation of your high individual work and charm. You have placed under the deepest gratitude all German colleagues who have enjoyed your hospitality and who have come to learn the extent of your helpful cleanliness towards strangers.

"We express the wish, therefore, with gratitude and esteem, that you may enjoy many years to come in full strength and activity the service of the profession, to your own honor, and to the usefulness and blessing of the dental healing art."—Signed by German dentists.

"The Austrian Association of Dentists, at a special meeting held on November 13, 1912, in recognition of the distinguished services rendered by Dr. Truman W. Brophy in the scientific and social development of dentistry, unanimously elected him as an honorary member of their association."

Your toastmaster has seen fit tonight to call to his aid six subtoastmasters, and will therefore without further remarks call upon Dr. Fred W. Gethro to introduce the first speaker of the evening.

DR. GETHRO: Mr. Toastmaster, Dr. Brophy, Friends, Ladies and Gentlemen: I am asked to perform one of the most pleasing duties of my life, to introduce one of my best friends, who, in turn, is to speak about the guest of the evening, who again is one of my best friends. I have been requested to restrict my remarks to

three minutes. I almost wish I were a suffraget. You have probably heard of the two suffragets who were having a conversation. One was very pessimistic, the other very optimistic. The pessimist was thinking everything was going wrong, that nothing was being accomplished, and that everything they tried was a failure, but the other one, who was optimistic, said to her: "Things are not as bad as you think they are; put your faith in God and She will help you." (Laughter.)

It is unnecessary to waste any words in introducing the first speaker of the evening. He is well known to all of you, but I think it might be well for me to say one word in reference to the recent work that Dr. Johnson has been doing. I know something of the arduous duties he has had to perform in connection with the Public Service Commission. I would like to say, we have the great benefactor of that movement, Mr. Rosenwald, as our guest this evening. (Applause.) It is a great honor to introduce to this audience one who really needs no introduction—my good friend, Dr. C. N. Johnson. (Applause.)

DR. JOHNSON arose amid the enthusiastic plaudits of his fellow practitioners and said:

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: I believe in that last statement there was something significant when I said "Ladies and Gentlemen." Notwithstanding the magnificent audience that has assembled here tonight to honor Dr. Brophy the greatest honor is represented at the other end of the room by the gracious ladies who have attended. (Applause.) I would feel complimented if such a tribute had ever been paid to me. (A Voice: We will fix it.)

I am asked to speak upon "Personal Reminiscences." I have had many personal experiences with the distinguished guest of the evening, and some of these I am going to relate. I am not going to tell you everything, because I have known him more than twenty-eight years. Ladies and gentlemen, Dr. Brophy is the first dentist whom I ever met in Chicago, and if he will only be reasonable and live long enough and give me a chance to shuffle off first, he will probably be the last dentist I meet in Chicago. (Laughter.) Whether we shall ever meet in heaven or not is another matter, because some of the things connected with Brophy make me doubt, but I am going to tell you some of them. (Laughter.)

A few years ago he had an office in the same building where I have mine, and at that time he was conducting a trotting horse farm in the country. We used to go to luncheon together and Brophy talked horses nearly all the time. It was a subject of mutual interest to us. Rather suddenly I noticed a peculiar thing. He began to change the subject and to talk about the proper kind of diet a man should eat at luncheon. Before that he had been eating anything that came along. I have known him to order pork and beans, Chicago pork and beans, not Boston pork and beans. But suddenly he began to dilate upon the virtues of crackers and cream for luncheon and finally he got me interested in the stuff and I began to like it. (Laughter.) About this time I met Dr. George Cook on the street, and he said: "Do you know why Brophy has influenced you to eat crackers and cream?" I said I supposed it was because he thought it was such a splendid diet. "Splendid diet nothing," he said. "Brophy has traded his trotting horse farm for a dairy farm (laughter), and he is simply using you to work up a market for his products in Chicago." (Renewed laughter.) Do you think a man like that will get to heaven? (Laughter.)

There is another thing about this trotting horse farm that I want to mention. I had a lady patient whose husband was a patient of Brophy's, and I thought if I could get this man away from Brophy it would help some. I met him one day and adroitly brought up the matter of dental service in a roundabout way, and he said, "I suppose you think it strange that my wife goes to you and I go to Brophy." I replied, "It didn't seem so strange to me that his wife should come to me." (Laughter.) He said, "I will tell you how it is I go to Brophy. When I have any work to do, I want to have it well done; I don't want to go back every week or two, and so I go to Brophy." (Laughter.) That nettled me a trifle and I said, "Why in the world, then, don't you send your wife to Brophy?" He replied, "I want to tell you about that—you see he has a trotting horse farm and is everlastingly talking horses, and I have been afraid he would get my wife so interested in thoroughbred stock that she would get to betting on the races the first thing I knew. I don't mind talking horse with him because I am something of a sport myself, but with my wife it would be different. Besides," he said, "you see, the fact is—Brophy is so devilish good looking." (Laughter.)

I am supposed to speak of personal reminiscences. I believe I would rather speak of personal impressions. When I see the magnificent audience we have here of distinguished men who have come great distances to honor this good friend of mine—men from Rome, Italy, men from Paris, France, from Canada, from all over this country, I am reminded of a remark made at one time by another good friend of mine who is now dead, the late Dr. Fernand Henrotin of blessed memory. Henrotin made this remark of another good friend of our distinguished guest, the late Professor Nicholas Senn. And Henrotin said of Senn: "There may have been general practitioners as eminent as Senn in the science and art of medicine; there may have been men as great in surgery as was Senn; there may have been men as prolific in the literature of medicine as Senn, and there may have been men in medicine as eminent in the capacity of teachers as Senn, but," he said, "I know of no man in the history of medicine who has combined in so eminent a degree so many capabilities as does Nicholas Senn." And tonight, Mr. Toastmaster, as I think of the things that are being said of our distinguished guest, I may say, as Henrotin said of Senn, there may have been men in dentistry as eminent in general practice as Brophy, although I want to tell you he has been eminently successful in practice—I have seen fillings in teeth that were inserted by Brophy more than thirty years ago doing good service today—there may have been in the profession men who have been as eminent in the field of oral surgery as Brophy; there may have been men as prolific in contributing to the literature of dentistry as Brophy—but if we examine this volume tonight it will be hard to believe that anyone has exceeded him—there may have been men as eminent as he in the capacity of dental educators—but when we think of what Brophy has done as a college man it is hard to believe even that—and yet, granted all of this, I know of no one in dentistry who has excelled in so eminent a degree as Brophy in all of these various activities. (Applause.)

Outside of his profession he has been eminent as well. Dr. Lawrence will tell you something about the avocations of Brophy's life.

I have been with this man in various capacities. I have known him, lived with him, eaten with him, and I have been associated with him more than any other man in the profession for

more than twenty-eight years. I have studied his characteristics and find one thing that stands out more prominently than any other, and that is the fact, that under all the strain and stress of circumstance and chance, I have never seen him when he was not full of courage; I have never seen him when this little couplet would not fit:

"The inner side of every cloud is bright and shining.

And so I turn my clouds about,

And always wear them inside out to show the silver lining."

That could not have been written so appropriately of any one I know as of Brophy. I have never seen him in the darkest hour when he was not optimistic—never. And when the clouds do come, as come they will, I always think of Brophy in connection with another little couplet which seems particularly appropriate:

"It is easy enough to be pleasant

When life flows along like a song;

But the man worth while is the man who will smile

When everything goes dead wrong."

(Applause.) And that is Brophy.

I need not refer to all the characteristics of Brophy, but there is one I should like to speak about, and that is his work as a dental educator. Many of the boys sitting here tonight have heard him teach in college. Most of them do not know how far his influence as a teacher extends. In 1881 he was instrumental in founding the first dental college ever founded in Chicago, and he has shown himself a genius in bringing that institution up to the place it occupies today. I once heard Dr. Garrett Newkirk, formerly of Chicago, but now of Pasadena, California, say: "When the time comes for Brophy to pass away from the activities of life, his monument will not be in Rose Hill or Graceland, but the best monument he will have is the institution which he has builded—the Chicago College of Dental Surgery." (Applause.)

We should remember not only his particular relationship to the institution which he founded, but the influence he has exercised in the dental educational movements of this country and foreign lands; his influence in the National Association of Dental College Faculties; his association with the Institute of Dental Pedagogics, and International Dental Federation, and let me tell you in this connection that he founded in this city an organization which is one of the most unique, I believe, in the history of the world.

It was through his influence that an association was founded called the Dental College Faculties Association of Chicago. At that time there were three dental colleges here. He organized the teaching staffs of these three colleges into one organization, so that we might at various times sit around a table the same as you and I are meeting now and discuss the problems presented in dental education. When you get a man that can harmonize the faculties of three colleges in one city, you have a man with a master mind at organization, and that is what Brophy did. Since that organization we have had better college work than before, and I look upon that one thing as significant of Brophy's greatest genius. It may seem strange to say that, after all the things he has done, but that one thing showing the trend of his mind seems to me the best of all.

There is another characteristic of Brophy I want to mention, and that is, with all his abilities in other lines, his greatest ability it seems to me is in being the friend of someone else. He is the best friend I have ever known. I never knew a man who will contend so righteously for the welfare of a friend as will Brophy in season and out of season. He is loyal always, and in conclusion I am going to pay him the greatest tribute I could pay to any man. If tomorrow I should unfortunately get into trouble—whether that trouble was my own fault, or whether I was innocent, it would make no difference—I would go to Brophy the first of any, and whether I was innocent or guilty I have the assurance in advance that he would take me by the hand and say, "Johnson, what can I do for you?" (Loud applause.)

THE TOASTMASTER: On behalf of our guests, the toastmaster would like to suggest that when anybody makes a suggestion as to whether or not he is going to meet another man in heaven, there is a question whether that is a reflection on the one or an admission by the other. (Laughter.)

When announcement was made of this dinner, there was a little item published in the Journal of the Chicago College of Dental Surgery, which goes to its alumni, and in this item it was stated that all of the graduates of this institution should be seen at the meeting tonight. A letter was received in Chicago in which a certain gentleman said that he had just read that statement in the alumni journal, and the sentence went on to say, "And so I am leaving Rome tomorrow and will sail on a certain steamer, and I

will be there for the banquet." (Applause.) That speaks something for the loyalty which has been instilled into the sons of this institution. This gentleman is not only a good dentist, but he is also one of Italy's fine violinists, and I take much pleasure in asking Dr. Piperno of Rome to play for us on the violin. (Applause.)

(Dr. Piperno rendered two selections on the violin, for which he was loudly applauded.)

THE TOASTMASTER: I will call upon Dr. Frederick B. Noyes to introduce the next speaker.

DR. FREDERICK B. NOYES: Ladies and Gentlemen: The gentleman whom I am to introduce needs no introduction to this audience, or indeed to any audience of dentists. Few men and few faces are better known in the profession the world over than his, and in introducing him I am going to say only a word or two. It seems to me there must be something in the case of this profession which peculiarly leads to the development of personalities. We have just had an example of it in the beautiful music rendered to us by Dr. Piperno. We need only to look over the history of the profession to find such men as Chapin A. Harris, a great educational organizer; such promoters as the man in whose honor this dinner is given; the great scientific spirit of the man who sat at this table a few moments ago, and whose scientific work is almost the foundation of our practice; the mechanical genius of another; the art instinct of another, and so on. Time would fail me to mention Kingsley and Atkinson and Webb and Patrick and a score more whose personality has stamped itself upon the profession. Few professions in the last hundred years have brought forward as many strong, marked spirits. I think no one will question the statement that few, if any spirits have wielded greater influence over the profession, especially in the East, than the man who is about to address you. To come in contact with him was to love him. His life exhaled a spirit as a flower a fragrance, and it gives me great pleasure now to present the perfect flower of the dental profession, Dr. Edwin T. Darby of Philadelphia. (Applause.)

DR. DARBY was warmly received, and when quiet was restored, spoke as follows: Mr. Toastmaster, honored guests, ladies and gentlemen, and fellow participants in this joyous event: My first obligation is to convey to our distinguished guest the felicitations

and joyous greetings of the Academy of Stomatology of Philadelphia for whom I speak tonight. My next pleasure is to present or offer my own personal greetings and to congratulate Dr. Brophy upon this magnificent gathering. So far as I am aware, man is the only animal that can rejoice in the honors that are showered upon him by his fellowmen. Your dog may show affection; he may show jealousy, but you never saw him glad when one of his own kind was exalted. (Laughter.)

It remains for man alone who has higher attributes to rejoice when his fellowman is the recipient of honors or when he is crowned with glory. Great as this gathering is tonight, it does not compose scores of men in the East who would be glad to be here tonight and help honor Dr. Brophy. For one reason and another many have been kept away who would have been pleased to be present. There seems to be an impression in the East that the distance from New York to Chicago is much greater than the distance from Chicago to New York (laughter), but I have always been of the opinion it was precisely the same, although I have observed on many occasions it is a great deal easier to bring a man from Chicago to New York than it is to take a man from New York to Chicago. (Laughter.)

I have known Dr. Brophy a great many years. I almost had the pleasure of helping to educate him in dentistry. In 1872 he slipped into old Pennsylvania College of Dental Surgery while I was resting, and slipped out a little later with his dental diploma, and I had no hand in his dental education. He is undoubtedly a better dentist and perhaps a more honorable man than he might have been if he had sat under my lectures, or if I had anything to do with his training. So far as I know, he has made good, and so far as you all know, and you are certain of it, he has made good. I never yet heard any institution from which he graduated has ever been ashamed of him or regretted that he was a son of that Alma Mater.

Whenever I come to Chicago I am impressed with one or two things; first, I am impressed with your bigness. If you have a fire, it is the greatest fire that the world has ever known. (Laughter.) If you have a World's Fair, it outdoes anything the world has ever known up to that time. If you have a Dental Congress, it is the greatest thing that the world has ever known in the way

of a dental gathering. If you have a banquet, it is what you see here tonight—the greatest of its kind. Another thing impressed me, and that is your strenuosity. Forty years ago Emerson said, “The race of life is intense; the runners are treading upon each other’s heels. Woe to him who stops to tie his shoestrings.” If my shoestring became untied on State street I would not dare stoop over and tie it. (Laughter.)

A good many years ago I visited the ruins of Bolbec, in northern Assyria. I doubt not some of you have been there. I had gone to the walls of the great ruined temples and I had seen in these walls colossal stones. Then we walked a little farther to the quarry from which the stones were taken, and there was a stone that had been quarried out, sixty-eight feet long, eighteen feet wide, and seventeen feet thick. It was all cut away, ready to chip off, and to be moved into the walls of that great structure. But why it was not done nobody knew. The ancients moved the other stones but why they did not move this one has never been known. As we stood there examining this colossal thing a man came up, and he was from Chicago, and we said to him, not knowing where he was from, “How in the world do you suppose the ancients ever moved those stones from the quarry, and how do you suppose they would ever move such a stone as that?” “Oh, the devil,” he said, “in Chicago we would jack that thing up and roll it into the wall in no time.” (Laughter.) That is what you do in Chicago, you jack things up and roll them into the wall or anywhere else.

Dr. Brophy often comes to Philadelphia. He does not think the distance is great, but whenever he comes there he takes something away with him. (Laughter.) On one occasion it may be a wife; on another occasion it may be a thousand dollar fee, or on another occasion it may be a million dollar cow, but whichever it be, it is always the best of its kind. (Laughter, followed by applause.)

Another thing that impressed me in Chicago is your institutions of learning. You are certainly abreast of the times if you are not in the vanguard. In your universities you teach everything from atom to star. I understand you make your studies elective, which is right, but I have observed other things here, and that is that your professions are too large for you. You have to split

them up. The profession of medicine you have divided and subdivided. You have specialists in almost everything. You teach a man the whole range of medicine—*anatomy, physiology, and everything that goes with the study of medicine*, and then, as soon as he graduates, he divides himself into specialties, and after ten years he knows nothing else. He has forgotten everything except the eye, ear, nose and throat, or some other part of the body upon which he practices. In dentistry you expect a man to attend a dental college three or four years; you teach him everything except the practice of medicine, and then you compel him to work in an area not over three or four inches in diameter. You give him the degree for which he has worked three or four years, which has been called only “a badge of partial culture.” I do not agree with you. I think it is a badge of three years’ hard work, and you ought to give him at least the privilege of practicing over an area greater than three or six inches. (Applause.)

I believe in specializing in both dentistry and in medicine. It has been justly said that a great deal of the wisdom of a man in this twentieth century is shown in leaving things unknown, and there is a great deal of practical sense in leaving things undone. The day of the universal scholar has passed. “Life is short and art is long.” The range of human knowledge is so great that no one brain can grapple with it, and he who would know one thing well must have courage to be ignorant of a thousand other things, however attractive or inviting. As with knowledge, so with work. The man who would get along must single out his specialty and into that must pour the whole stream of his activity, all the energies of his hand and tongue, heart and brain. Broad culture may mean beautiful things to contemplate, but after all, it is the narrow edge man, the man of single and intense purpose who throws his soul against all things else, that accomplishes the hard work of the world. With the exception of a few great creative minds, the men whose names are historic have been identified with some great achievement upon which all their life force is spent. You think of Watt and instantly the steam engine is suggested; you think of Davy and the safety lamp that lights up the mine is suggested; of Harvey, and the blood courses more quickly through your veins; of Jenner, and you see disease stayed in its progress by the discovery of vaccination; of Morse, and the electric spark is seen

darting from continent to continent; of Edison, and the electric light flashes before your eyes; of Marconi, and you see hundreds of human lives saved from sinking vessels. (Applause.)

I am aware that this concentration of oneness of aim is not always to be desired. There have been prodigies, geniuses, who have accomplished a great many things during an ordinary lifetime, and they have done these many things well. Cicero was a master of logic, of ethics, of natural philosophy, besides being versed in geometry and music and the other fine arts. Leonardo da Vinci was not only a great painter, but a mathematician, metaphysician, musician, poet, architect, sculptor, chemist, anatomist, besides being well up in mechanics and natural history. The very rarity of such prodigies is what makes them prodigies. While one such man, who is fully equipped with these possibilities, may impart knowledge, there are thousands who have made a failure in life by dabbling in too many things. Most men are not unsuccessful if they have only known a few things. It is far better to be ignorant of many things and thus escape the calamity of being ignorant of everything. I do not mean, understand, that man should be a mere cog or pulley in the machinery of the world. He should be a man, first of all. He should prepare himself fully for the avocation which he follows in life, and there is no avocation in life for which any man feels himself fitted that he cannot serve with distinction and perhaps honor. All work is honorable, no matter what it is. The man who serves his fellow man, and does what he can, as, I presume, our Dr. Lawrence here tonight has done to lift the souls of men out of the darkness into God's effulgent light, has done great work. You men of the medical profession, who are ameliorating the sufferings of humanity, are doing a grand and noble work. And you gentlemen of the dental profession, who are saving human kind from hours of agony and are giving comfort to them throughout their whole lives, are doing a grand work. In that, all of us are trying to do our duty as best we can.

All are architects of Fate,
Working in these walls of Time;
Some with massive deeds and great,
Some with ornaments of rhyme.

Nothing useless is, or low ;
Each thing in its place is best ;
And what seems but idle show
Strengthens and supports the rest.

For the structure that we raise,
Time is with materials filled ;
Our todays and yesterdays
Are the blocks with which we build.

Truly shape and fashion these ;
Leave no yawning gaps between ;
Think not, because no man sees,
Such things will remain unseen.

In the elder days of Art
Builders wrought with greatest care
Each minute and unseen part ;
For the Gods we see everywhere.

Let us do our work as well,
Both the unseen and the seen ;
Make the house, where Gods may dwell,
Beautiful, entire and clean.

Else our lives are incomplete,
Standing in these walls of Time,
Broken stairways, where the feet
Stumble as they seek to climb.

Build today, then, strong and sure,
With a firm and ample base ;
And ascending and secure
Shall tomorrow find its place.

Thus alone can we attain
To those turrets, where the eye
Sees the world as one vast plain,
And one boundless reach of sky.
(Loud applause.)

THE TOASTMASTER: I have no doubt many of you have wondered sometimes why Dr. Brophy likes to travel so much. Dr. Darby has given us in part the secret of that. He was always after something, and always brought something good home with him.

That is typical of Chicago. If we have not here what we think is the best, we are perfectly willing to go somewhere else to get it, no matter where it is, and bring it here, and after we get it here we are always glad and willing to give that other place, no matter where it is, the credit for it. All we want to know in Chicago is whether a thing is good or not, and if it is good, it is the Chicago spirit to get it if we can. (Applause.)

I take great pleasure in calling upon one of the members of the committee, who has been an arduous worker for the success of this meeting, Dr. Hart J. Goslee, to introduce the next speaker. (Applause.)

DR. GOSLEE said: Mr. Toastmaster, Dr. Brophy, Dr. Jenkins, Ladies and Gentlemen: Among the many delightful missions which have been accorded to my confreres tonight I want you to believe that the one which has been accorded to me is a particularly and especially delightful one, to say just a few words by way of introduction of the gentleman who is to speak to you from abroad. I want to say at the very beginning, that when this testimonial banquet was originally spoken of, and when the first efforts were made to bring about the delightful tribute which is being paid to our esteemed friend tonight, and when we got to a point where it became necessary for us to select speakers for the evening, the very first one, with all due apologies to others, was the gentleman who is to follow me. We selected him, first of all, because he was farther away than any of the others for one reason, and because it was desirable for other reasons, principal among which were these facts: he is a close personal friend of the gentleman whom we are honoring tonight; secondly, ladies and gentlemen, he stands at the very head of the American Dental Society of Europe. Indeed, he stands as the typical representative of American dentists in Europe. (Applause.) I wish I might have time to tell you many of the personal attributes of this gentleman, and yet I feel it is unnecessary. I wish I might tell you of his personal accomplishments and achievements, and yet most of you are familiar with them. I wish I might tell you of his delightful home, that castle built by a sculptor and seemingly built for him because of his artistic nature, and in which I have been honored by being entertained. I wish I might tell you of many other things that our guest is familiar with tonight with regard to Dr. Jenkins, but I feel all this would be unnecessary and out of place.

Dr. Noyes has referred to our dear friend Dr. Darby as the perfect flower of dentistry, and I take great pleasure, ladies and gentlemen, in introducing to you now as our next speaker, that prince of dentistry, Dr. N. S. Jenkins of Dresden. (Applause.)

DR. JENKINS was enthusiastically received. He spoke as follows:

Mr. Toastmaster, Dr. Brophy, Dr. Goslee, Ladies and Gentlemen: From all parts of the globe, but especially from Europe, including the British Islands, containing over four hundred million of souls, whose vast population, so far as it can be represented by its dentists, comes the tribute of homage tonight to our honored and beloved Dr. Brophy; for he possesses a European reputation. This reputation is his, not only because of his faithfulness and eminence as an instructor, and his fame as an oral surgeon, but also because Europe has had the opportunity to know him as a man.

Ever since the foundation of the International Dental Federation he has conscientiously attended every meeting of that body, which has been designed to keep up a continuity of interest from one International Congress to another, and has impressed himself upon all its members as representative of all that is best in American character. In every department of the work of the Federation he has shown the clear reasoning, the sympathetic appreciation for the opinion of others, the largeness of view and the patience in working out details which typify the philosopher and the good man of business.

But besides all this, he has been unsparing of his time and strength when in Europe, as well as in America, in placing himself at the disposal of those who have needed his help in his famous operation for cleft palate. I remember his once telling me that it was his dental training, aside from his general surgical skill, which had given him the marvelous dexterity which has made this wonderful operation possible. We are, therefore, justified in claiming him, in this respect also, as one of us, however far we may individually fall short of his renowned achievements. You can, therefore, understand in the years during which dentistry has been making its way in Europe to the position of a recognized specialty of medicine, the enthusiasm he has inspired among our European colleagues in bringing the most famous surgeons of Europe to sit at his feet as his admiring pupils.

But the homage which Europe pays to him tonight is not his alone, greatly as he deserves it all. It is rendered in his person also to American dentistry in general, and it is an occasion of which Chicago should be especially proud, since it follows the appropriate awarding of the first International Miller Prize to that eminent and honored citizen of Chicago and of the world, Dr. Black. (Applause.)

We all know how for generations American medical students have profited by generous opportunities of study in Great Britain, France, Germany and Austria. The most striking and characteristic return which America has been able to make to Europe for this great privilege has been through the youngest child of medicine, American dentistry. To us have come large numbers of European dental students who have returned to their homes to spread abroad the knowledge they have gained. There is not a single dental institute in Europe which has not directly profited from the instruction given by native American dentists, or European dentists of American training. Of the former the revered Miller was the brightest example. (Applause.)

It is, therefore, not surprising since the exchange of academical professors has, during the past few years, been of such great importance in interpreting America and Europe to each other, that many of our European colleagues feel that an exchange of American and European dental professors would be of great advantage. Especially is this the case in Germany, and it is part of my mission to inquire, if such a proposal should be made in the fullness of time, if it would meet with a sympathetic response in America.

Such a movement in Germany would have to originate with the dental profession and be transmitted to the Minister of Education, and then probably be carried on to the Emperor himself. It is important, therefore, before any such suggestion is made, that it should be certain that the project would be acceptable here. It is, therefore, for this reason that I venture to bring this matter to your consideration at a time when we are brought, through this festive occasion, into more intimate touch with our European colleagues.

Two years ago Dr. Brophy came to Dresden to make an operation for double cleft palate and hare lip upon a child. He greatly desired to finish in one operation, but finding it better not to overtax

the endurance of the child, he consented to return in another year to complete his work. When he returned last summer he was ill and needed complete rest, but nerved himself to treat this one case, after which he was to hasten back to Carlsbad to complete the greatly needed cure; but when this case was finished he was asked to take just one more, and with the unselfishness which has ever characterized him, he consented; but one case after another was brought to him. The nurses fed him with sandwiches and broth, and he kept up until late in the evening, when, utterly exhausted, he was brought back to his hotel unfit for travel and put to bed, determined early the next morning to start for Carlsbad; but very early in the morning a poor child was brought to him, the parents having heard from afar off of his fame, and he was entreated to take just this one case more. Every selfish consideration forbade, but when did he ever know selfishness, or whenever did the poor and helpless appeal to him in vain? Then, like the great Master, he wrought righteousness even on the Sabbath day, in which he so greatly needed rest, and left with us a lesson good for all worldly souls. (Applause.)

You remember how Victor Hugo makes the good Bishop say, last of all, after enumerating the many names of God, "but, Solomon calls thee 'Compassion' and that is the most beautiful of all thy names." Accept then, oh, noble Brophy, the homage of thy colleagues throughout all the world. (Loud applause.)

THE TOASTMASTER: I regret very much to announce that the next speaker on the program, Dr. J. B. Murphy, who is one of the closest friends of our guest, is too ill to be with us this evening. It so happens, however, that Dr. Brophy is not without many close friends in the medical profession, and therefore we have no difficulty in filling his place with another man who is equally as well known both in dentistry and medicine as the man whose name appears upon the program. I therefore will call upon Dr. Logan to introduce the next speaker. (Applause.)

DR. W. H. G. LOGAN: Mr. President, Mr. Toastmaster, our honored guest, Dr. Brophy, Ladies and Gentlemen: I have been asked to tell you something about Dr. Murphy, because he is at home ill in bed. It has been thought appropriate that you should at least know something about the man who was to have been here.

The eminent citizen who was to respond to the next toast was

born fifty-five years ago on the 21st of December, on a farm located a short distance from the picturesque little town of Appleton, Wisconsin. His early educational advantages were those presented by the public schools of his native city, and soon after graduating from the Appleton High School he entered medical college and graduated from Rush Medical in his twenty-second year.

On a certain evening just previous to his graduation, we find this young man seated with his fellow classmates about a banquet board. All are requested to rise and the master of ceremonies proposes a toast to their Alma Mater. The champagne glasses are lifted, and the young man known as John Benjamin Murphy is about to taste intoxicating liquor for the first time. But the remembrance of an old pledge causes him to hesitate for a moment, and from a friend I learned that in that moment through his mind flashed this thought, "I am going to give my life to the betterment of humanity, I will have need of a clear brain and a steady hand." He lowered the untouched glass and in silence renewed his pledge for life. To the glory of the man let it be said that he has led a temperate life all these years. (Applause.)

Every great surgeon some time in his life receives a few compliments, but more often much uncalled for abuse, because of the fees he is supposed to receive. (Laughter.) Perhaps the citing of a case in Dr. Murphy's practice will best explain what I have in my mind.

On a cold stormy winter's night a man applies to the receiving room of Mercy Hospital. He is hungry, penniless and a foreigner in a strange city who is suffering from an old ununited fracture of the arm. Every room in the hospital is occupied. The Sister in charge gives him fifty cents for food and directs him to the police station near by for a bed.

Dr. Murphy is told of the case next morning and he immediately sends one of his attendants for him. He is brought before the Wednesday Practitioners clinic. Dr. Murphy examines the patient and after learning all details turns to the practitioners who fill every seat in the surgical amphitheater and says "Here is a poor man, with a foreign tongue, in a foreign land without money. This hospital has no charity wards, no charity rooms, no charity funds. Therefore, it is up to the Doctor." His directions were. "Send this man to the office, have him registered, give him a good room and have his expense charged to my account." (Applause.)

The patient is dismissed in a few weeks cured. Some months elapse. The day before Christmas is upon us. Dr. Murphy steps into the office of Mercy Hospital. A poorly dressed man leaves his seat and with some hesitation presents himself before the distinguished surgeon. Our former patient with the arm lesion in substance expresses this idea as he holds Dr. Murphy's hands.

"Tomorrow will be Christmas, but I could not spend the day in peace and happiness until I had first taken this trip four hundred miles to thank you for all you did for me without pay." I take it that Dr. Murphy never received a larger fee from any source than that tendered him by this poor man. For, this was indeed a royal fee, not paid by mere gold, but cancelled by a feeling of full appreciation and everlasting gratitude on the part of the patient for the skilled service rendered. (Applause.)

I would have you know that I have not been reciting the history of an isolated case, for in the year of 1912, Dr. Murphy performed ten hundred and eighty-five operations and the records show that 58% were performed without charge. (Applause.)

I will not detain you longer other than to say that you shall now have the pleasant and profitable opportunity of listening to one of the medical world's most distinguished members, one of the dental profession's best medical friends and one of suffering humanity's most willing and valuable workers, who is no other than our own, Dr. William A. Evans, of the City of Chicago. (Loud Applause.)

Dr. Evans was given a very enthusiastic ovation. He said: Mr. President, Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: I am sure, that for sometime you have been wondering why I was sitting up here at the speakers' table, and the wonder that I am here was expressed a few minutes ago by a gentleman who passed my chair and rather bluntly asked what I was doing here. (Laughter.) This suggests two lines of cleavage that may have been responsible for this inquiry, both expressed and implied. In the first place, this elevation of twelve inches serves to divide these banqueters into two groups, those who are enjoying the speeches, and those who are not. (Laughter.) In the second place, it may have occurred to some of you that a doctor has no place at a dental banquet. There may have been a time, and perhaps there are localities at the present time where this view prevails, but generally speaking our professions have so merged into each other that it is

difficult to see just where the line of cleavage comes. In fact, we are in much the position of Senator James, the newly elected senator from the State of Kentucky. I read an article a little while ago in which it was stated that Senator James was bewailing the fact of the bald-headed man, and a friend to whom he was speaking asked if it was by reason of his heightened susceptibility of hair, and he said no that was not the trouble. The trouble was, he said, "When I wash, I have to keep my hat on to stop at my face." (Laughter.)

Our two branches of the medical profession have been doing so well in recent years, have been fraternizing so frequently, we really have to keep our hats on to see where the line of cleavage is between us. (Applause.)

Gentlemen, I have been commissioned by Dr. Murphy to respond to the toast that has been assigned to him—"Oral Surgery." In the midst of his preparations for this evening he was taken sick on yesterday, and the speech on the technical side of his toast has been in great measure prepared, and I have it here. It relates to Brophy, the oral surgeon, and traces the development of that science and shows Brophy's relation to that development. I will not read that prepared speech, but I am sure that in time through proper channels it will come to the attention of each of you. It is illustrated, and as I speak there are various illustrations that stare me in the face. But this is what I get out of it, that Brophy's work has developed the science of oral surgery along certain special lines; that he has particularly developed the art of operating on structures relating to and adjacent to the mouth in such a way as not to scar the structures of the face, and to an unusual degree he has developed the mechanical side of these procedures to the end that at this time it is possible not only for Brophy, but for those who come after Brophy to operate on various parts of the face through the mouth with such skill as to leave the face unmarred; a recognition of the principle, that so far as our superficial opinions are concerned that we are largely guided by the average judgment that is based upon the conduct of the street, which is in a considerable measure tinctured by flavor and influenced by considerations of this character; that he has particularly developed the art of operating on cleft palate, and in that development he has recognized certain biological principles. One of these is that in cleft palate, in the average in-

stance perhaps, the structures are there, but development is represented by a failure to close the cleft, and that on this should be based operative procedures. More than that perhaps, an oral operative procedure is essential to a proper result, such a procedure being undertaken at the very beginning of life.

Within the last twenty-four hours I have been reading Virtue's book on "Stammering and Lispings," and I came away from it with a profound respect for the man or woman who has learned how to talk at all, and a most profound respect for the woman who has learned how to talk exceedingly well. (Laughter.) As I saw the charts and diagrams in which there were set forth the information necessary regarding the failure of speech and the acts required for speech, I wondered how anybody ever learned to talk, and I gained an added respect for the man that taught this principle that children with cleft palates have difficulty enough in learning how to talk once, and that there is no sense or reason in multiplying or doubling these difficulties by allowing them to learn how to talk one way with cleft palate, and then after operation they have to re-learn how to talk in accordance with the changed conditions that are brought about by operative procedures. If I were to talk longer along this line, I might even persuade myself to think that I was the gentleman who was intended to speak to you tonight as the temptation in this direction is considerable.

This is a great day for the Irish. (Laughter and applause.) Just about a month from now a distinguished Scotch Irishman goes into the White House. On Monday of next week, D. V. and others willing, an Irishman goes into the gubernatorial chair, and with our streets lined with Irish policemen and our offices filled with Irishmen, I am constrained to believe that it is a great day for the Irish (Laughter), and therefore I am greatly tempted to carry this thing off as best I can and proceed to speak right through my teeth under the alias of Murphy. (Laughter.) But in the midst of my exuberation, a short time ago I got a note from this corner of the room that brought me back to earth. It read: "How to keep well. At the west end of the room there is a h—l of a draft, and what is good for cold feet?" (Laughter.)

Ladies and Gentlemen, that serves a double purpose. In the first place, it serves to bring me back to earth and to demonstrate to myself that this was not Murphy. (Laughter.) Again, it serves to

give me a text for the second part of the mission that I have come here to discharge, and that is to convey to the gentlemen who are assembled here the confidence of Dr. Murphy, and to convey to the guest of the evening a statement of the esteem and regard in which he is held by Dr. Murphy. (Applause.)

The question is, What is good for cold feet? There has also been running through my mind this other question, What is the best tribute that can be paid to Brophy? It is worth while to have an associate of twenty-eight years say the things of one that Dr. Johnson has said of Brophy. It is worth while having men come from the cities in the east, or from Canada, or from various foreign lands bringing the messages that they bring; but after all, is not the best tribute to a man something other than the spoken word? And so I turn to these documents that are before me on the table, and the question comes up, Is not the cure for cold feet the record of achievements that is found in this volume? I find that it has been necessary to still further abbreviate this partial list of the writings and record of accomplishments of Brophy, and so in seeking an answer to this question I go down this page and find what constitutes the best tribute to Brophy, and simultaneously find an answer to the question, What is good for cold feet? Let us take his career as set forth on the page opposite his picture. I find he has started out right; that he started out to be a dentist, and four lines down he was born. (Laughter). Is it not proper and fitting that the shaping of a man's career should begin at the moment of his birth? And I believe that in the light of eugenics, we are agreed that it is necessary, if the job is to be properly done, he should begin four lines before he was born. As I read on down the page, I read such items as these: "Attended country school in the old log school house. During winter attended school in the village of Blackberry. Attended Elgin Academy. Family moved to Chicago. Began the study of dentistry. Attended Dyrensforth's college. Attended Chicago Atheneum of nights during the winter." I believe that is an answer to the question of what is good for cold feet, and also an answer to the other question of what is the best tribute to Brophy, namely, the dogged persistent courage that is set forth on that page; that courage which withstands any obstacle; that courage that presses on and in spite of discouragement proceeds to the attainment of the end in view. I read on down and find that in 1871 he was burnt out

in the great Chicago fire. There his trouble seems to have come to an end, for from that point on the record is brighter. That is not without precedent itself in certain affairs of men. (Laughter.) There is a cure for cold feet, gentlemen, in the fact that when one has been associated with a man for so many years, when one has stood shoulder to shoulder with him in fighting the battles of life, or standing by one as one grows older and goes down into the valley of the end of life; there is a tribute in the fact that a great institution bears the imprint of a man's personality, and while over two thousand operations have been done by Brophy for cleft palate, that is by no means the limit of the cleft palate operations which have been performed as the result of development of this operation and the imprint of Brophy. And all throughout the land, not only this land of ours, but of all civilized lands, the practice of dentistry is better done by reason of the fact that Brophy has operated and Brophy has taught. There is an answer to each of these questions in this, that you have gathered from all parts of the world for the purpose of paying this tribute in a certain limited sense. It was worth while that this record could have been printed. In a certain limited sense it is worth while that this record could have been set forth in this volume. But there is something gained from personal contact on occasions such as this.

There is a necessity that men should feel themselves drawn together from all parts of the world for the purpose of receiving an impulse and then radiating it out into the places of the world. There are times when men get cold feet under the strenuous existence of the present time. As the perplexities of civilization multiply, as the clouds of the future seem more and more impenetrable, there is a disposition here and there for men to get cold feet. But there is a remedy for cold feet. There is something that is good for cold feet in the recognition of the fact that your great profession under the stimulus and guidance of a man like Brophy is taking its place in the doings of the world's work. That you are standing shoulder to shoulder in carrying the responsibility of your profession, and I believe that this spirit in its application to those assembled here to-night; this spirit of taking up and carrying on this work; this spirit, in so far as Brophy has been a large factor in its inception and in its conception, is the best tribute that could be and is being paid to Brophy. Therefore, in the name of Murphy, I subscribe to the

sentiments expressed on this menu card, "With the progress of civilization, there have appeared in every walk of life men, who, by their energy and devotion to their work, have become leaders among their fellows. There is in the dental profession a man who has been a material factor in uplifting his profession and in alleviating human suffering; and it is fitting that his co-laborers and friends should pay tribute, and take pleasure in acknowledging to him, while living, their appreciation of his life of service in and for the profession, his country and civilization." (Loud applause.)

(The following is the speech Dr. Murphy had prepared, and which he was prevented from delivering through illness. We are glad to include it in the report.—EDITOR.)

DR. JOHN B. MURPHY: *Mr. Toastmaster, Honored Guest, Ladies and Gentlemen:*

This is to me a particularly enjoyable occasion, first, because, not being a dentist, I am invited to join the dental profession in doing honor to one of your conspicuous men; second, because I am having the opportunity to congratulate you one and all upon your good judgment in tendering a banquet of these magnificent proportions to one so doubly worthy of anything that you might do for him. In doing honor to him you are honoring yourselves! You are honoring the medical profession of which he is also a distinguished member. You are encouraging a respect and homage for the art of surgery in its broadest sense, and still more than this you are accentuating the principle, that men who have the courage to break through the ordinary or customary lines of thought of the day and do new things should be extolled and held up as examples of mental magnitude and moral courage.

I am delighted to participate in the occasion and to be included with those of you who have watched the progress of the guest of honor tonight, Dr. Brophy, through its various stages: First, of discouragement; second, of tolerance; third, of discussion; fourth, of acceptance, and fifth, of crowning success.

I am delighted to be present tonight to witness the "breaking of the alabaster boxes of perfume," to hear the congratulatory messages from the scientific societies of the world and to view the gorgeous tokens of personal and professional esteem from all quarters of the globe, in honor to his science, his integrity of purpose, his

art, his genius. The three decades that have elapsed since his entrance into dentistry have spanned the period of time in which its science was practically created. Its art, however, far preceded that time. Operations for the malformation of hare-lip were performed as early as the seventeenth century, and Le Clerc, who lived from 1644 to 1702, gave directions for a figure-of-eight suture; the reading of these would appear as one of today's procedures. Indeed the figure-eight thread over the needle was the ideal means of approximation in Dr. Brophy's early days. The eighteenth century produced little advancement in this line. The nineteenth century has made surgery of the palate and mouth one of its crowning glories.

The French were especially prolific in the early part of the century and we find many operations bearing such names as Malgaigne, Nélaton, Mirault of Angiers and Giraldès. Malgaigne, or rather Clemot, for the former borrowed the idea from him, freshened the edge so that two flaps were formed with the base down, and a lozenge-shaped interval remained which was then approximated. Nélaton modified this by transfixing the isthmus of skin so that there was but one flap; this also produced a lozenge-shaped aperture. Mirault made a flap on one side attached below by its base, while the other side was freshened, and the obtuse angle of the freshened side fitted in above the flap, while the flap itself was sutured to the pared border of the lip. Giraldès again made a double flap, but differing from Malgaigne's in that the base of one flap is left below the nostril, while the other is made as usual, the "mortise" operation.

These older methods have been modified by König and by Hagedorn. The former split each side of the cleft by a T-shaped incision; the corresponding parts of the opposite flaps were then joined. Hagedorn's method is a zig-zag incision somewhat like König's but more complicated. There are several other procedures, the quadrangular flap of Gustav Simon, the rectangular operation of Golding-Bird, Owen's modification of Mirault's operation, etc., but time forbids more than a mere mention.

While the French were excelling in the repair of the lip, the Germans were advancing, with great strides, in the reconstruction of the palate, although Limonier, a French dentist, in 1764 united the palate. Graffe was the first to outline a definite procedure and

to effect a repair of the soft palate, while Krimer in 1824 first closed the hard palate, somewhat on the plan which Lane has so grandly perfected in recent times. Dieffenbach first freed the alveolar processes and endeavored to approximate them. Von Langenbeck in 1861 advanced this method another step; Rose and Rotter improved the lip repair, while von Eiselberg transplanted the finger into the palate cleft.

Dr. Brophy has developed and completed the present accepted operation for the entire world. What an honor it is for this society and for us all to see the name of Truman W. Brophy chiselled in the keystone of an arch of science whose pillars have written on them the names of Malgaigne, Nélaton, Mirault, Giralès, Clemot, Grafe, Krimer, Dieffenbach the Great, Von Langenbeck, Rose, Roux, Rotter, our own Warren, Mikulicz, von Eiselberg, Bergmann, Wolff, Golding-Bird, Billroth, Simon, Roberts and Lane, and we should be proud that we have lived in his time and have been in personal touch with him; that we tonight have the honor to praise individually and collectively the man whose name will forever live in the annals of the surgery of his time. His many contributions to the literature have attracted the attention of the medical world. He has been called to foreign countries, as was Marion Sims, to operate on distinguished people and in the presence of more distinguished men, and he has always by his dignity of bearing, his scientific enthusiasm and the advancement of his art reflected credit on his American birth-right and American progress.

The age at which children were to be best operated greatly exercised the surgeons at one time. Mütter, the surgical worthy of Philadelphia, in the early nineteenth century, advised the early operation, but he was unable to induce his colleagues to accept that which Brophy, through his careful technic and ultimate results, has forced his contemporaries to practice. He has lowered the age of election from that of 5 to 7 years, as believed best by Simon, Billroth and Trelat, and of 3 years by Kassel, Tavel and Eastman, to the first year of life, now accepted by Wolff, Lane, Roberts and others as the most favorable one in which to do the operation following his technic.

Friends, I might spend hours in enumerating the great profits that have resulted to unfortunate children through the labor, perseverance and propaganda work of Dr. Brophy. I feel, Colleagues

of the Medical and Dental Professions, that this testimonial is but a mild expression of the heart felt gratitude and admiration which the surgeons and dentists of the world owe to Dr. Brophy, and let me venture to hope that he may long live to continue his beneficent work for suffering humanity and act as a beacon to stimulate original work on the part of the profession and as a model for emulation for the generations of dentists and surgeons of the future.

I ask you, friends, to rise to the toast to Truman W. Brophy :

“Hoch soll ehr leben,

Drei Mal lebe Hoch.”

(To be continued in our next issue.)

THE NEED OF AN INSTITUTION FOR DENTAL RESEARCH.

BY C. N. JOHNSON, M. A., L. D. S., D. D. S., CHICAGO.

The intense interest manifest at the present time in the phenomena of cause and effect in all departments of science, has led to the establishment of institutions for original research where men of scientific tendencies may work out the various problems presented to the human family, unhampered by the stern necessity of striving each day for the wherewithal to keep body and soul together. To relieve a man who has a scientific trend of thought of all concern connected with his subsistence is to give free rein to his best energies in searching out the hidden phenomena which stand in the way of man's greatest happiness. It is an anomaly on our boasted civilization that today we know so little of many of the most serious problems which stand in the way of our welfare. In many of the essentials of true happiness we are still groping blindly in the dark till we are sometimes prone to exclaim in the bitterness of our hearts “How long, oh Lord, how long?”

It is amazing, when we stop to consider it, how much of our weal is bound up in what the world knows as pure science. Poetry has its place, and a very important one, in the scheme of our enjoyment; literature of all kinds is of the utmost importance; the arts are to be cultivated for their humanizing effect, and the softer graces of life must not be ignored. But above and beyond all these must

*Read before the Odontological Society of Chicago, February 11, 1913.

come a scientific knowledge of this marvelous thing which we have come to know as our body.

Medical men are naturally giving their best energies to searching out the cause of disease. The fight between medicine and the diseases which decimate the human family has always been terribly pathetic, and today it is almost as pathetic as ever. We stand apparently in awe and well nigh helpless in the presence of many of the afflictions of mankind. We have gone one step forward and only one—we hear today the distinction made between "Preventable" and other diseases. As if it were not yet an acknowledgement of our weakness to admit that all diseases are not preventable! Who knows that there is not in the alchemy of the future something which will render humanity immune to the terrible scourges which from time immemorial have done so much to depopulate the earth?

Fortunately, for the possibilities of the future, scientists are doing much today for the welfare of mankind by searching out the causes and cures of many of the diseases which infest mankind. Everywhere scientific laboratories are being established for original research work, and some of these laboratories are accomplishing great things. The recent achievements of the Rockefeller Institute at New York are calling attention to the possibilities of such work, and to go back a little further the laboratories of Europe must not be overlooked. It was in the University of Berlin where our own Miller did so much to clear up the etiology of dental caries, and it is doubtful if he could have accomplished what he did without the facilities placed at his command, and without the scientific atmosphere in which he worked.

The first thing for us to consider at this time is the need of such work in dentistry, and the next is the most feasible plan of carrying it out. As to the need there can be no question. Today the practice of dentistry is assuming a different responsibility from what it ever did before. The significance of mouth hygiene is being impressed upon thinking people—both professional and lay—in a manner which makes it imperative that we know more about it. That the chief factor in many of the diseases which affect mankind relates to conditions in the mouth can be no longer doubted. This has been repeatedly pointed out by dental writers, and now the medical profession are awakening to the great evil which has been, and is being, wrought among humanity through neglect of oral

conditions. In the light of what we now know there can be no longer doubt that many a life has been sacrificed at the altar of ignorance concerning the true significance of what oral hygiene means.

Dental disease is the most prevalent of all human ailments, and its very universality has obscured our vision too long to its real seriousness. What a difference it would make to the efficiency of the human race if all dental diseases could be prevented! And this really can be done by coöperation between the profession and the people. But of course this will not come about very soon. It is an exceedingly long journey to the goal of coöperation, and before this can be consummated it is necessary to educate the people as to what is involved in the question. But to go back of this and to work intelligently toward preventing these diseases we must first learn more of their etiology. We know but very little even yet about dental caries except that more than 90% of the people are affected by it. We know that an acid does the mischief and that micro-organisms produce the acid, but we do not know why it is that in two mouths, both of which show the presence of these microorganisms, one will be immune and the other susceptible. Till we know this we cannot hope to prevent this disease.

What do we know about the causes lying back of erosion, or the real *modus operandi* of its progress? Almost nothing. What of pyorrhea alveolaris in its varying manifestations? Nothing except that it is rapidly becoming one of the most dreadful scourges which attack the structures surrounding the teeth, and cause their extensive loss. We are puttering, and ever puttering in our efforts to check decay after it has begun, and to cure pyorrhea when it has already sapped the foundation of the teeth. We are using our ingenuity—an ingenuity not to be despised, either—in frantic efforts to undo the harm that has been done. And let me add in doing this we are giving the very best service of which we are capable with our present facilities. Lacking the knowledge of what causes these diseases we cannot be expected to do much toward preventing them. We have little need to blush for the character of our service to the people when all that we have learned relates only to repair and not to prevention.

But the time has come when a new obligation is being forced upon us. It is clearly our duty now, if it never was before, to

institute a series of experiments with the aim of learning the causes of dental diseases and the surest means of preventing them. The question is, how shall this be done? The first requirement is money, the next requirement is money, and the next is more money. I do not mean by this that vast sums are needed to carry on this work but that it is folly for any investigator to start in without the assurance of financial support during an indefinite period. To do this movement justice there should be an endowment suitable in size to sustain a laboratory of research permanently. To start it without adequate means to support it on a permanent basis is to waste so much energy. No man can do this work to advantage and earn his living practicing his profession. He must be relieved of financial worry to gain the best results, and this must be a permanent instead of a temporary relief.

Logically this work should be undertaken by the government, but practically this is not feasible at the present time. Our government is not yet educated up to it. The government has only gone far enough to look after the welfare of hogs, and cattle, and sheep. It is absorbed with the problem of growing the best kinds of grain and fruits. It takes a vital interest in the health of domestic animals, and will aid a farmer most effectually in running down the causes of disease in his herds or flocks. This is done because these herds or flocks represent so much money and the government has learned the significant lesson that whatever is a saving to the individual is a saving to the community. It is perfectly proper and entirely commendable for the government to do these things. It is for the betterment of the state, and the nation, and the family.

But the government has one very important lesson to learn, viz., that the health of the people is of greater importance than the health of its domestic animals, and that from a mere mercenary point of view, to say nothing of sentiment, it is a saving of dollars and cents to keep the people free from disease. Human health is the greatest asset any nation can have. It has been estimated by those who have studied the economic aspect of the case that the cost of disease each year among the people of this country alone runs into an enormous sum—up in the billions. In a recent number of the *Bulletin* issued by the Department of Health of Chicago the statement is made that "the sum of \$1,500,000,000 is a low estimate

of the annual economic loss from preventable deaths." The extravagance entailed in the high cost of living which we hear so much about today is as nothing compared with the extravagance of disease. It is the cruelest waste in this age of excessive wastefulness. If the government would spend one-half the sum which is wasted annually by disease in maintaining a department of health to teach and direct the people how to keep well, and then establish original research laboratories to seek out the causes and prevention of disease, it would be the most economical expenditure of money that could be devised.

But governments move slowly, and we must not hope at the present time to get much encouragement from the government in establishing research laboratories for the study of dental diseases. It is the history of all these movements that the initiative must be taken by individuals. What we need today is that some public spirited individual shall build, equip and endow a research laboratory for the especial purpose of investigating dental diseases. There is no other disposition of money which could eventually result in greater benefit to the human family than this. The Forsyth brothers of Boston are causing to be built a memorial dental infirmary to cost a million dollars, and have pledged another million for its maintenance. This is for a double purpose—to give dental service to the poor children of Boston, and to educate the coming generations as to the significance and proper care of the teeth. When this movement was first started I wrote an editorial regarding it in which I stated that this action on the part of the Forsyth brothers would result in greater good to Boston than any other single philanthropy that could be mentioned, and as time goes on I am more than ever convinced that this is true. In Chicago we have gone at the problem of emergency relief for the children of the poor in a different way. Recognizing the crying need for such work among our children the Odontological Society several years ago under the direction of Dr. Brophy started a free dental infirmary in the Ninety-third street school. Shortly after this the Chicago Dental Society took up the work. The Englewood Dental Society has previously begun to work along this line in conjunction with the United Charities of Chicago. It was soon found that voluntary service could not be relied on to maintain permanently a movement of this kind, and after three infirmaries had been started by the

dental societies a halt was called on the equipment of any more by the present writer, who was chairman of the Public Service Commission having this work in hand, until such time as provision could be made for their maintenance. At this stage Mr. Julius Rosenwald, a man whose name will go down in history as one of the most practical philanthropists of his time, came to our assistance with an offer to equip six additional infirmaries, making ten in all, and to pay salaries to operators aggregating \$10,000 per year to keep them in operation. Thus in Chicago today we have ten dental infirmaries located in the public school buildings in different parts of the city where poor children can be cared for. The idea most prominent in the minds of all was the relief of suffering among the children, and this is an object worthy the consideration of every true philanthropist, but now that this movement is under way it is time that we turned our attention to a matter which is of really greater importance than this. It is a splendid thing to go out into the poorer districts of the city and relieve suffering, thereby increasing the efficiency of those whom we serve, but it is infinitely a higher mission for us to find out the causes of these diseases which we are today combating, to the end that we may ultimately be able to prevent them. The curing of a disease, as I have already pointed out, is a costly thing, and it savors of that kind of extravagance which is the most woeful of all because it is unnecessary. Not that we are at present able to escape it, not that we are falling short of doing all in our power with our present knowledge, but that the time has come in our evolution to higher and better things when our energies should be directed toward the prevention instead of the cure of disease.

And the sooner we are permitted to establish laboratories of original research the sooner will that consummation so devoutly to be wished be brought about. I would that some of our wealthy men—men who are seeking unselfishly and generously to benefit the world—could be made to see the significance of this work. If they could understand as we today are beginning to understand the real value to the human race of mouth hygiene there would be not only one but literally there would be dozens of them who would volunteer to finance laboratories to throw light on this important subject.

All honor to the Forsyths and to Rosenwald for what they

have done. In each case they have builded better than they knew, and the world will remember them as among the foremost benefactors of their time. Who shall be the man or woman to go one step farther and provide the means whereby the profession may be enabled to prevent disease instead of groping hopelessly in the dark in many of its efforts to cure it? Such a man or such a woman will render a more signal service to humanity than the soldier who fights its battles or the statesman who directs its policies. The soldier or statesman may appeal to the passing wave of popularity, but the benefactor who contributes to the relief of human suffering adds a permanent page to the volume of the world's advancement.

PRESIDENT'S ADDRESS.*

BY M. R. HARNED, D. D. S., ROCKFORD, ILL.

I count it a great honor to be chosen president of this society a second time, and to be permitted to extend greetings to all of you on this rare occasion, a "Silver Jubilee." Looking into your faces for the twenty-fifth time, in convention assembled, as I do with many of you, I am impressed with the great privilege which is mine of knowing you individually and collectively, and my greetings are greetings of love wrought through a quarter century's knowing. We have worked profitably and pleasantly together for the first quarter, we are well warmed and trained for the balance of the race and ought to break the world's record, for the home stretch is just around the curve, and all the way we are giving the best we have, and always receiving more than we give. Can any one doubt who wins?

As I think back over the years since we assembled that dingy day in Rochelle and met for the first time, many whom we have learned to respect and love, some of whom have passed to the "greater association," I recall so many pleasant occasions that it seems to me I could write volumes of reminiscences of our beloved Kitchen and Beckwith, our story-telling and genial Gills, our humorous Cox, our Sunny Jim, our ever helpful Noyes, our famous Taggart, our dependable Hanaford, our eloquent Bentley, our

*Read before the Northern Illinois Dental Society, October 30, 1912.

reliable Allen, our porcelain Reeves, our methodical Black, our earnest Underwood and Phillips and Biglow and Smith and Logan, our business Mead, our mechanical wizards Roach and Helm and Bryant, our joking Stone, our sleepless Snyder, our clever Sowle, our expectant secretary and our faithful membership.

I could write pages of the helpful suggestions and wonderful demonstrations; little things which have made our labors easier, big things which have changed our modes of practice, and how each and every meeting has filled us with the determination to know more and do better work.

We have all been conscious of a free and easy treatment of subjects, under discussion, where everyone is welcome to say what he thinks in his own way without fear of a stenographer, conscious that here is a place where his opinion will be appreciated.

Our spirit of good-fellowship has grown as our membership has increased, and while some of us have become "silver lined," there are none of us in the "sear and yellow."

I should like to dwell upon the work we have done in developing the various advancements in dentistry, such as the manipulation of gold, the progress of prosthesis, the art of ceramics, the process and methods of casting, the inspiring of orthodontists, the development of radiography, the practice of sanitation, the promotion of education, the maintaining of clinics, and most of all the development of ourselves.

I should like to go over the personnel of our society and contrast the individuals as I knew them years ago, with their youth and vigor, their hopes and aspirations, their professional pride and determination, with the individuals as I know them today, with their achievements. Perhaps many of you could share with me the feeling of disappointment, for as I look back over the years it seems as if my life had been one of procrastination; I have put off the doing, from morning till evening, from day to day, from week to week, from month to month and from year to year, until it seems as if the "putting off" had kept me very busy. And yet, gentlemen, we can all note somewhat of progress. This at least has come to us with our maturing, a knowledge of ourselves which means self-mastery, and this makes all things subservient to our needs. Out of the nebulous, hazy ideas caught in college have developed great principles which actuate our practices and our lives. Our pur-

pose and trend is determined whether we achieve our ideals or not. We have formed either a habit of indifference to the needs of the profession which we have chosen, or we have been inoculated with that great urge "to know, to do, to become." A dental education is not an equipment to make money, to give social position, nor even to make a living; all these are subservient to the idea that a dental education is an equipment to render helpful service, a means to develop a soul.

It is gratifying to philosophize in this fashion and to reminisce of our achievements, but we really have more important work to do, and the commencement of a new quarter is a good time to begin it. As I have contemplated the work of the "Public Service Commission" of our State Society, I have been deeply impressed with the difficulties under which they labor. Their work is to educate the public to a realization of the dangers which menace them through diseases of the oral cavity, and to convince the public of the desirability of school inspection. How hard it must be with the meagre data and facts available, a moment's thought will suggest. I hope you have all read a paper published in the March DENTAL REVIEW, 1912, written by Dr. Edward H. Baker, M. D., on "The Relation of Mouth Conditions to Bodily Health: What the Dental Profession Needs." If you haven't, please do so when you return home. In this he takes up the subject of our professional standing, and points to the requirement of scientific data regarding the relation of mouth conditions to bodily health, as the "crying need" of dentistry today, as he says, "Nearly all dentists would agree that such research, and collection of statistics is desirable," but he proceeds to show that it is necessary. He goes on to show how necessary such information is to the maintenance of our profession. We may for instance, in convention assembled, agree that seventy per cent of bodily ailments are traceable to previous abnormal oral conditions, there may not be a dissenting voice and there might be ten thousand of us, but one man with compiled statistics relative to the subject could convince more people in one hour than we could in a decade. The reason for this is dual: first, conscientious men in giving opinions are not sure, while charlatans are; second, this is a scientific age and people don't care for opinions, they want facts "compiled for ready reference."

We don't realize how easy it would be for the charlatan spe-

cialist to take the cream of our practice, largely because we don't know facts pertaining to many things, such as the results of irregularities of teeth upon the mental and physical development of children; the effect defective teeth have upon disposition and school work of children (Dr. Ebersole's work being about all so far published); the effect of pyorrhea upon the digestive organs and general health; the percentage of teeth which may be saved by being kept clean; the effect of diet upon mouth conditions (as shown by Dr. G. V. Black in an article published in April DENTAL REVIEW on "The Deposit of Salivary Calculus," starting from the deposit of agglutinin, caused by over eating. We want to know the actual percentage of pyorrhea caused by malocclusion, by badly fitted bands of crowns, by calcarious deposits, or systemic causes, and the percentage of cures. (Dr. M. L. Rhein says eighty per cent of cases of pyorrhea proved to be alveolar abscesses, but he is guessing, as we are when we give opinions upon many subjects.) We want to know the percentage of people who care for their teeth themselves and who have them cared for in a professional way. We want to know what percentage of artificial dentures are successful. We want data to prove the relative value of porcelain, gold and inlays as tooth preservers. We want to know facts before we can go before the public and successfully convince them that we are a learned profession worthy of consideration.

Look at the value of such records as Dr. Bogue has kept for thirty-five years enabling him to give definite information on the subject of "Orthodontia of the Deciduous Teeth" (appearing in current number of the *Dental Digest*). This is the sort of information we need before we can go very far in our crusade for the education of the public.

We are apt to lay too great importance upon being first to use a new remedy or a process, whereas the important thing is to have definite and accurate knowledge of our common doings, together with the facts of results. Gentlemen, is it not time that be began to KNOW more and have facts to substantiate our opinions?

It would be gratifying indeed if out of the Northern Illinois Dental Society should arise a "Moses" to lead us to the "promised land" of "facts" by organizing us into a band of statistic collectors. Our society is not working along any definite line, and I can think of no work which we can do for our profession which would be of

equal importance, and I wish to suggest that a committee be appointed at this meeting to formulate a working plan for the collecting and compiling of records along some special lines to be selected by the committee, and an endeavor made to enlist the coöperation of as many members of the profession as possible in the work.

You will see by our program that we deal in history; let us plan to *MAKE* history which will give an uplift to the whole profession. Let us undertake a definite, constructive, coöperative work in which all can help instead of drifting along and leaving the work and the honor to someone else.

In conclusion, I wish to thank you for your assistance in making this meeting worth while, and I hope we may each take home many new ideas to make our work easier for all concerned, and make many friendships which will last, to the end that a great profession be made greater.

THOUGHTS RELATIVE TO ARTIFICIAL DENTURES.*

BY DR. IRVIN B. CAROLUS, STERLING, ILL.

An old, old subject ever new and interesting—written in accordance with the wish of our honored executive committee, to hear another's idea, not ideal. With an ideal attained, progress ceases; but an ideal never overtaken, affords something to work for, and life continues a living fountain instead of being a stagnant pool. I shall not try to force upon you any new theories, nor burden you with tedious technicalities, but simply lead your consideration to some personal experience applied with that gleaned from others. And, furthermore, we trust it may be much more pleasant than the atmosphere accompanying the regeneration of an old denture.

There never was a time probably in the history of the profession when the demands were so great and the needs so limited for this class of work. Public ignorance, inconsiderate indifference, and avaricious commercialism on the part of many practitioners, form the foundation upon which is built the pernicious standards that stare in our faces unremittingly. With it some build practices, build homes and fortunes. Some build curses and disrepute. Whatever

*Read before the Northern Illinois Dental Society, October, 1912.

else they may be doing for self or patient, they are producing an hereditary maxillary deformity and psychological condition, which will require several generations, and perhaps many more, for Nature, with our persistent assistance to rectify. As proof of this contention I ask you to be serious, and direct your attention to the contracted impacted-molar jaw, the irregular dental arch with its accompanying terrible afflictions including practically all the diseases of the oral cavity with those of the nose and throat, the whole alimentary tract, and in their turn, all of the organs of vitality crying out for proper mastication, digestion, and assimilation.

Fellow workers, here is supreme responsibility! Why do we pass it so lightly, and why are there not many more to carry out this work of prevention instead of cure? To promote this interest we must be teachers. No one else will educate the public. Our efforts should be directed towards the spirit of the times—aim to save, not to destroy—not be the first to break the permanent dental arch; nor that of the deciduous, before the proper time. If extraction is persistently insisted upon, send it away and shift the responsibility to someone else who is cowardly enough to do it. We cannot afford to do a wrong to others which we would not tolerate for ourselves.

We do, however, occasionally find neglected cases, for which extraction and artificial dentures is the inevitable result. Here then it behooves us to put forward our best efforts—the very best that we possess—producing an artificial substitute for the failure that Nature intended well.

Being positive of the diagnosis it is much better to treat such cases preparatory to an appointed time for the surgical part of the work, which should require of us such care and attention to perfect cleanliness, neat operating in extraction, replacing or removing distorted or prominent portions of the process, dressing lesions, etc., that it will command a compensating fee of itself—not a deposit that ties a string to the plate. The writer has never been able to convince himself of this charitable (?) tendency of so many Doctors of Dental Surgery who give to the laity free of charge such an important corner of the sheepskin. Little things like this and many others, tend to measure us in public opinion. But public opinion should not be our whole ambition. We should do it because it is right; because it is justice to self and justice to others. We are professional men and need a better opinion of ourselves and our services.

Each and every one of you can take an impression and make a plate more quickly than this paper could tell it, and perhaps better. The technique you have learned well and practiced so often, that general ideas cannot interest you. Individuality and special experience calls us together for exchange of ideas and methods for better service, so let us consider a few points of greater or less importance in detail of rubber dentures; though they may be applied to all others as well.

Every dental laboratory should have a liberal and well-selected assortment of impression trays. When new they should be given a coat of thin solution wax and gasoline. After being used they should be boiled, wiped dry and coated again. This prevents discoloration, and the ease with which tray and impression can be separated by simply holding over heat for a moment will amply repay for the effort to keep the tray like new and always ready.

Plaster of Paris is the standard impression material perhaps the best though there are cases, and especially of the lower, that better results can be obtained by using fresh low-heat modelling compound. Use as little impression material as you can consistently. There is great danger to the results in using more than is absolutely necessary.

In taking an upper impression patient should sit erect; tray inserted, pressed firmly to place and held with one finger on center of palate; then incline patient very much forward to the point of gravitation. This position you will find very beneficial in relaxing muscles, and preventing nausea. Do not remove until chemical action has made the tray very warm. A good story will help to pass the time, and if you gauge it correctly, the climax will come just at the right time and you will find the hearty laugh will assist in removing the tray more easily than a forced cough.

The bite taken with modelling compound in an upper and lower bite-tray will be very efficient though not final for it is not wholly dependable and requires the trial wax plates for assurance of accuracy. Place the tray in patient's mouth, instruct to close just enough to retain it; then with one hand on the back of the neck and the other on the forehead, tilt the head backward until the muscles of the throat are tense; then require the closing slowly to the point of proper proximity of upper and lower, and mark the mesial and bite line. This method rarely fails to give the cor-

rect rest bite, and you will find its accuracy is more certain and the simplicity of manipulation is much ahead of other means and devices you may have tried.

Varnish the plaster impression with shellac. When dry, dust with French chalk and rub it smooth with the finger. This will give a splendid surface for the model and make easy separation. Pour model and let set for several hours, preferably over night, which can easily be arranged by making the appointment toward the close of the day. When the model and impression are separated, mark the border line of rims and palate, cutting away the plaster to the depth of cardboard thickness graduating to nothing at the edge of the ridge, except at the palatine border where it may be graduated anteriorly for about an eighth of an inch. For this portion the groove may be deepened slightly at the softer parts of the palate between the median line and the condyles. All nicely trimmed it is now ready for more French chalk, making a fine smooth dense surface enabling the easy removal of the wax trial, and will also present a splendid surface for vulcanization. Place models in bite, and set in the articulator. Be positive of the median, horizontal and vertical lines; also, the relation of the bite-line to and distance of models from the hinge of the articulator. In other words, the articulated models must represent the anatomical parts. Diligent care in this manipulation eliminates the possibility of future grinding of the porcelain.

To differentiate between the steps required in the production of an artificial case, and point to one part as more important than another, would meet with a variance of opinions. While all are exceedingly important, this work we have to do with the articulator requires a considerably higher development of artistic qualifications to produce esthetic results, thereby approaching most nearly the natural in appearance and function. It is very simple to employ mechanical methods and make a set of teeth; and how often we see the results of such carelessness—so hideously artificial that we mutely censure the fellow who did it. What we really need and desire is art which conceals art. Then let us not be content to cease our efforts until we have attained that condition—a denture which will give to the patient that conformity of facial feature; that harmony of mould; that exquisite blend of shade; the proper relation of bite-line to, and sufficient room for that important assistant

to mastication, the tongue; the correct overbite which plays its wonderful part in speech; and the grinding mascerating surfaces for lateral manipulation as well as the chopping. All together restoring appearance and utility as nearly as we are able to cope with nature. The wax trial plate with teeth set up, gums nicely carved, and results of absorption restored—just as we wish the finished denture, is the working model we have to obtain the result; and it may be necessary to try and try again until it is just right. Each individual case requires its own special care and consideration. No two are just alike any more than the two individuals.

Tooth manufacturers have succeeded well in giving us shades, but there is great opportunity for improvement in the production of better moulds—something more nearly imitating the natural organs so that it will not be necessary to spend so much time in reshaping to suit the requirements. But it is time well spent. The work is fascinating and the result well pays for the effort. It leads us in new fields and broadens our knowledge of human nature, in the study of temperament and character.

Did you ever notice the individuality of the dental office displayed in an artificial denture—how accurately and unintentionally certain mechanical effects produced are recognized as that coming from some brother's earnest application to duty? Whether you have or whether you have not, it still remains a fact. This individuality is the design of the Creator, and is a part of our being. We cannot overcome it if we would; and would it be wise if we could? It serves well as an illustration of what we should attempt to do—to produce an artificial substitute so natural and becoming that we might as easily be able to recognize the father or the mother of the patient through family character lines displayed in the teeth as we do the maker of the artifice.

Experience has taught that with good methods and careful manipulation, the old fashioned horseshoe-shaped suction chamber and the newer-idea suction cup are decidedly unnecessary. But as a precaution to rapid alveolar absorption and slight assistance to the inexperienced patient it is well to make what might be called a relief extending over the whole palate of the plate and overlapping the palatine border of the alveolar ridge. This is accomplished by burnishing one thickness of tea-lead on the model after the flask has been cleaned ready for packing. A double thickness covering

the hard portion of the palate along the median line is advisable in a case of that character. The impression should not be scraped. The rugae should be saved and carried to the lingual surface of the plate as prominently as possible.

The finishing of the plate is an important factor many times hurriedly overlooked. All rims and borders should have rounded polished surfaces—the palatine extremity graduated to a nice thin margin. The mucous surfaces of the plate should be polished as nicely as the labial and lingual. Its natural undulations must be preserved with that smoothness of surface which renders it non-irritating and easily cleaned.

We have now come to the point of greatest anxiety, perhaps, and especially to the younger practitioner—the appointed time for the handiwork of man and the handiwork of God to be joined together. What a moment of suspense as the newly made plate is being placed in position! What joy or what gloom! Will the wings droop beatenly, or will the chest swell up in proud distinction? What is the use? Why not overcome such uncalled-for state of mind and be passively natural? It is too early to exult with joy, your duty is not ended thus far, you are awaiting an early subsequent appointment and more if necessary until such time as the conditions prove the efforts have been the success intended. In this way it is easy to overcome that humiliating moment every one of us has experienced in hearing, "Well, now I'll try it to see if it is alright." It will be alright if you make it so, and think it, and impress the patient with your position. On the other hand if Fate seems to have worked against you and the thing does not stick or jibe just right, it is too late to feel badly, you should have rectified that error at its proper time. Perhaps it was the impression, the bite, the selection of shade, the mould, the articulation, trimming the model, the packing, the flask-closing, the vulcanization, the cooling, the finishing, or perhaps it was the plaster-mix. Whichever it was you knew it at the time or should have known it. The trouble was due to carelessness and it is a very easy matter to prove it. "Be sure you are right, then go ahead." It may take a little more time than to do it hurriedly; it demands more concentration of thought, but it pays to be positive and know just exactly what the finished work will be. Get better fees and give the people better service. If you don't some competitor will. Let others

say, "He is a high-priced man but a mighty fine dentist." I can't conceive of a nicer compliment, can you?

To be sure, the road to such success seems rough and almost impossible; but those who are not naturally endowed with attractive personality must and do make up for it in closer application to those qualities which may be acquired; so that on final standard measurement we are largely on a par, and it is within our pleasure to so conduct our professional career that we may feel the sense of gratification that we have done our duty well.

Each new achievement leads to grander success and higher rewards; elevates our professional standing, increases our own confidence, and serves humanity—our greatest ambition.

DISCUSSION.

ARTHUR C. WILLMAN, Kankakee, Ill:

I am very glad to hear this paper because of the high ideals held up by the essayist. If our ideals are low, our work will be low in the standard of excellence and our fees will also be low of necessity.

In these days when the public is being educated to the need of dental service, our work must be followed by good results and good results can only come from intelligent, conscientious work. The present educational campaign is dispelling the ignorance of the public and then woe to the practitioners who are at present indifferent or careless.

Many of the artificial dentures of today are far from being what they ought to be and are of very little service to patients wearing them. A good many digestive systems are being worn out before their time by people who are trying to masticate their food with them, but I do not agree with the essayist that a hereditary maxillary deformity is produced which is passed on to posterity.

The suggestions in regard to cleanliness and thoroughness are all good. I believe the only way to put the models on the articulator correctly is by the use of the face bow. Unless the articulator correctly represents the mouth, in repose and in action, the dentures constructed upon it cannot be expected to give satisfaction. Until we had an articulator that allowed us to get the correct condyle path much of our labor was spent in vain.

Many people do not appreciate and value their teeth as they should. Those who have a sound natural set have a blessing indeed.

But if they are so unfortunate as to lose them and need an artificial substitute and can find a dentist who can give them something which will harmonize with the other features, restore their contour and expression, enable them to "Fletcherize" and speak distinctly, they should appreciate such service enough to be willing to pay a good fee.

The dentist who can successfully carry an artificial denture through the various necessary steps and turn out a piece of work fully up to the standard he sets for all his other work should also be able to kindly but firmly tell the patient that he simply cannot spend the time necessary for such work for \$10.00 or \$15.00.

The essayist says "Get better fees and give the people better service." I say let's turn it around and give them better service and then demand better fees.

ORAL PROPHYLAXIS VERSUS CLEANING TEETH.*

BY DR. E. R. HART, ST. LOUIS, MO.

These two terms have for so long a time been used synonymously that the difference in their meaning has almost been lost sight of. But there is a difference, nevertheless, and the sooner we, as dentists, awaken to that fact, the better it will be for ourselves, our patients, and dentistry in general.

The operation of cleaning teeth, as generally performed, requires practically no skill, and its effect is only detrimental, while oral prophylaxis requires more exacting technique than any other branch of dentistry, and its effect is evident, not only on the teeth, but on the whole human economy.

The cleaning of teeth, as compared to prophylactic treatment, should receive hardly any consideration. The former, as generally practiced, creates a condition of susceptibility, whereas, the latter places the mouth in a condition of comparative immunity.

In ordinary teeth cleaning, owing to poor technique and inadequate instruments, the teeth are abraded and the gums lacerated by rapidly revolving brush wheels, making it almost impossible for the patient to use his tooth brush for several days. During this interval, even had the teeth been smoothly polished, the gelatinous

*Read before the St. Louis Dental Society, February 4, 1913.

plaques would have had time to form and become impregnated with calcium salts, which no tooth brush can remove.

On the other hand, in prophylactic treatments, the work is done by properly and delicately shaped instruments for removing all deposits. For proper polishing, wooden points of two different shapes held in porte polishers are required. First, a broad flat point to polish the distal surfaces of the last molars, and the buccal and lingual surfaces of the other teeth; second, a thin sharp point to reach the interproximal surfaces and nearer the point of contact. The most inaccessible and vulnerable part is the contact point and its immediate vicinity. This is reached by means of Cutters' dental tape. After thoroughly going over all these surfaces, it is then necessary to use the following disclosing solution:

Iodine crystals	Grs. 50
Potassium Iodid	Grs. 15
Zinc Iodid	Grs. 15
Glycerin	Drs. 4
Aqua	Drs. 4

This solution leaves no stain on perfectly clean polished surfaces, but it discloses microbic plaques and small granules of calcific deposits that, being transparent, are invisible to the eye, and defy the sense of touch, even after months of experience with the hand polisher.

When the staining solution fails to disclose any plaques or deposits, the teeth can be considered clean. The next step is to impart to all surfaces a beautiful lustre by using Young's rubber cups and discs carrying Carmi-Lustro. This final touch excites the admiration of the patient and never fails to elicit the comment, "Doctor, I'll really be afraid to eat for fear of spoiling that beautiful lustre."

Just at this point is the proper time to instruct the patient as to his duties in maintaining this beautiful condition, because true prophylaxis cannot be practiced without enthusing the patient and securing his co-operation. He must be instructed in the correct use of a properly shaped tooth brush to be used with an effective dentifrice, and here let me say: For the dignity of the profession, don't prescribe any dentifrice simply because it is well advertised. Learn to write your own prescriptions. What would be your opinion of a physician, if you paid him a professional visit, and after exam-

ining you he said, "Well, Doctor, just go to your druggist and get a bottle of Peruna or a box of 'Pale Pills for Pink People.'" You would feel absolutely no confidence in this man's professional ability.

It is true that the neglect of this branch of dentistry results in the loss of more teeth than any other cause. This being true, do you not think it behooves you as members of the dental profession to become more familiar with the subject, or do you wish to be mere tooth carpenters? I believe this work will have to be adopted by our profession, for we will be driven to it by the demands of our patients.

The lack of interest in this subject in our city is forcibly shown by the scarcity of clinics given along this line. But how many men follow a clinic to the end? I, myself, have given several and played to an almost empty house. Why? Because I was supposed to be showing off some of that fancy swell stuff, when really the reason for this unconcern is the very little time given to the reading of dental journals. They know very little about the subject and can see no need of informing themselves. Very few can recognize pyorrhea in its earlier stages, and when they do find a pronounced case—"Oh, well, it is much easier to extract and make a bridge." The only excuse I can find for this awful ignorance on this vital subject is their lack of realization of what the consequence is. I can imagine nothing that will improve dentistry, dentists and their fees more than a thorough realization of the subject of prophylaxis, for when one is wide awake to the benefits which accrue from this work, and really feels the proper enthusiasm, that one will, of necessity, have to do the most thorough operations to satisfy the demands of his conscience; that is, extension for prevention, or, to be exact, extension for cleanliness, proper regard for contact, occlusion, finishing of fillings at the gingival margins, proper fitting crowns and cleansable bridges, and many other points which are carried out by conscientious dentists.

The man who practices prophylaxis not only dignifies his professional standing, but commands a dignified fee, whereas the man who cleans teeth—the best that can be said of him is that he does it cheap, and he receives the equivalent of a tip.

The majority of people who receive dental services have pyorrhea. Ninety per cent is due to careless dental work, lack of prophylaxis and lack of instruction. Why agitate oral hygiene and

examine mouths of school children, when scarcely a dentist has ever had a prophylactic treatment? How can they enthuse their patients when they, themselves, use a tooth brush with little regularity?

No great movement ever succeeded without the adherents becoming fanatics. So it is with oral prophylaxis. We must live it and breathe it every hour.

Why not inform ourselves in this great work, that the profession in St. Louis may attain the dignity that is by right ours? Why not be dentists of today with methods of tomorrow, instead of dentists of today with methods of yesterday? Wake up and show that you are alive!

Lew Dockstader of minstrel fame used to impersonate an editor who had a large delinquent list. The account of one subscriber was several years old, and despite frequent promises to come forth with real money or a cord of wood, the delinquent continued in arrears. Finally the editor decided to start something. He sat down, wrote out a becoming obituary for the delinquent and published it. The quiet of the village was, of course, abruptly broken and the house of the debtor was soon filled with callers who had come to sympathize with the widow. Instead of finding a corpse, they found the head of the house alive and well. When the situation was explained to him, he called up the editor and assured him that the obituary was premature. "Guess not," replied the editor; "you are dead." "Well, I'm not. You hear my voice, don't you?" "Yes, but I fail to see you. You promised me that you would drop in yesterday and settle that little bill if you lived. As you didn't show up, I knew you must be dead, so I thought I would get your obituary in this issue." "But," protested the delinquent subscriber, "I am up and walking around." "Oh, that's nothing," replied the editor; "there's plenty of dead ones moving about."

PROCEEDINGS OF SOCIETIES.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held February 11, 1913, at the residence of Dr. J. H. Woolley, with the president, Dr. C. S. Case, in the chair.

Dr. C. N. Johnson read a paper entitled "The Need of an Institution for Dental Research."

DISCUSSION.

DR. TRUMAN W. BROPHY:

While Dr. Johnson was reading the closing paragraphs of his paper this thought occurred to me: I do not see any reason why this paper should not be given general publicity. It is a matter of so much importance to humanity that it comes home to everyone. It should be published in the daily papers and given as wide publicity as possible. The latter part of the paper is exactly what the people need to arouse them into activity. I am sure there are men in this city who would be glad, if they only realized the importance of this movement, to come forward and furnish all the funds necessary to do the work. I have confidence enough in the committee having this matter in charge in the schools to feel they will do all in their power to assist. I have known for quite a while the great interest that has been taken in this subject by Dr. Woolley, and I know it is his earnest desire to see the work carried out. He has invited several gentlemen here to present some plans for the carrying on of this work. Someone recently made the statement that Chicago will have ten millions of people inside of the next fifty years. I think it will have a greater number than that. Chicago had one hundred people in it eighty years ago, and in 1867, when I first came here to live, it had fifty-two dentists. We know now it has over two thousand dentists, and it would seem to me with the rapid growth of this city and with its enormous wealth there ought not to be any trouble in raising funds in support of this movement. Chicago is the second city in the Union in population and in importance from a commercial and monetary point of view; yet Boston, which is quite a way down in the list of cities in population, comes forward with one of its multi-millionaires who furnishes an example for the world, the most magnificent tribute that the founders could have made to the cause of suffering humanity. I refer to the Forsyth institution. So here in Chicago, I trust our friend Mr. Lynn may tell us how this is going to be done. He may have in mind the names of men who are ready to give freely of their money to go on with the great work of equipping it with scientific apparatus necessary, and if he can do that we can name some men who are eminently fitted to carry on the scientific work.

I am glad Dr. Woolley has called this meeting and brought his friends here. I am especially glad that Dr. Johnson has presented us a paper covering the essential points regarding the necessity of original research concerning subjects upon which we need information. He has enumerated a great many conditions which men are dealing with in a rather empirical way without being based upon sound scientific principles.

DR. FRED B. NOYES:

Dr. Johnson has not overestimated the importance or value of this movement to the community and to the nation economically in the way of relieving suffering, and in the increased efficiency of the manhood and womanhood of the nation. It has sometimes seemed to me that in the development of the dental profession in Chicago scientific research has not kept pace with other phases. When I started out not many years ago there were six or ten dentists who had microscopes and were doing microscopical work, and I am inclined to think that that is a larger percentage than would stack up in Chicago at the present time. In other words, at that time there was a larger percentage of the dental profession who were active in scientific work which, like all true science, has no direct certainty of acquiring knowledge that will be useful except as we know the acquisition of all knowledge becomes useful. Things have been worked out by developing scientific facts regardless of their application, and then the application discovered after the facts were established. In a great many instances, of course, the direction is chosen in the hope that the facts established will be useful. But not all lines have proven to be useful, and one of the greatest and most pathetic things I think in the annals of science are those chapters written in the life blood of some man where he has followed out the road, and at the end has only been able to put up the sign, "This road leads to nowhere," so that any man in choosing a scientific pursuit cannot have the certainty of acquiring a result that will be useful in its application, but it is a contribution and just in proportion as he has thoroughly and honestly and completely worked it out, it becomes useful either in the application of its results or in the direction of the work that is to follow.

There have been but few men coming from the dental schools with the ambition to do any work for themselves. I have spent a great deal of time in thinking on that proposition and trying to

discover some way by which men might do many of those things but it is going to be some time yet in the evolution of dental educational institutions before we can train a considerable number of men and equip them for that line of work. I think there will be more of them in the future, and it is to be hoped that the plan or plans which are to be suggested tonight will be worked out to completion. For the last fifteen years or more I have had some kind of work on hand, but it has been impossible to accomplish anything that has been worth while because I have had to earn my bread and butter, and when three years ago I gave up general practice one of the most important considerations was the hope that in time I would be able to do some scientific work. It was a good deal of a sacrifice in some ways because I wanted to stay in practice with my father, and I gave it up because I recognized from the first that if I remained in general practice it would make any further scientific work impossible. The man who wishes to do scientific work must do one of two things: he must be either part of an institution and work in and for and through and by means of that institution, or else he must have some force of personality and force of ability to be able to select his occupation so as to leave some margin of time and energy and income to support that work. Whenever that is done, it is done at a tremendous sacrifice, and but few men accomplish it because it requires coördination of two independent lines of activity, and the old saying that most men who serve two masters will cling to the one and forsake the other, is true. They cling to research work and forget their practice, and in either case they lose both. If we are to stand where we should stand in the future as a profession, we must have the lines of scientific research organized so that men who have any inclination or desire can work without sacrificing everything else. No man engaged in scientific work can do so without sacrificing a great deal, but in the past it meant sacrificing practically everything. I think the time will surely come when our educational institutions will offer an opportunity for men to devote some time to scientific pursuits. In the years immediately following their professional training, when every man ought to be able without sacrifice to give a certain amount of time to scientific work, in that period there will be developed those who show ability to devote their entire energies to the work during the rest of their lives. I believe we have got

to train that kind of material in order to make working plans possible and effective.

DR. J. H. WOOLLEY:

About ten years ago I met a scientific gentleman whom you all know. This research movement had been in my mind previous to a conversation I had with Dr. Cook. Dr. Cook elaborated the subject and gave me much encouragement in regard to its possibilities. I immediately set to work and appointed a committee. A president was appointed, and the president, myself, and other members of the organization have been hammering away at it ever since. It was a source of great joy to me when at the last meeting of this society Dr. Johnson promised to read a paper on this subject. As I stated at the last meeting, during the conclave of the Knight Templars' this city received a great many Sir Knights, and among them I met a very interesting gentleman. He was a man of great culture, force and character, and in a conversation with him I brought up the subject of research work as carried on in the Rockefeller Institute. I spoke to him in regard to my desire to organize an institution in Chicago for the purpose of carrying on dental research. He said to me, "You will have no trouble whatever, whenever you have good cause, in getting money when it can be shown that you are going to benefit mankind." He was the state superintendent of New York. He said there was a man in Chicago who was waiting for such an opportunity to devote his wealth toward the object in view.

It seems to me the matter of raising money when our cause is just, when it has to do so much for humanity, will be a comparatively easy one. Here we are examining the teeth of the children of the public schools, a worthy, noble object, but that looks to me as if the cart is before the horse. What we want to know is how to stop the ravages of disease. We want to know the cause. We want to establish some possible hypothesis by which we can explain the phenomena of disease, the foci of infection.

Dr. Johnson spoke of preventable diseases. I read somewhere in connection with that, that human lives were lengthened by fifteen years and disease prevented, but that over a million and a half dollars is wasted annually because of the incapacity of people to earn money which they could do if they were well physically. What is greater than the joy of living? I hope that some-

thing will be done tonight towards organizing an institution for dental research. I thought some of inviting two or three of our capitalists at a dinner to be given at some hotel where this subject can be presented to them, and if this can be done, I think we will be able to achieve the result we are after. But first there must be organization. Chicago is such a great commercial center and fraught with such great possibilities it seems to me we can have an institution established here for research work if we go the right way about organizing it. We can have a combination of the different medical laboratories; we can have a press room and a common scientific center where dentists can meet, and from this great center will emanate a world of good. See the institutions that have been started and helped by Mr. Julius Rosenwald. His money is free. Mr. Lynn, who is with us tonight, will outline a plan for organized effort in order to carry this work out. This dental research idea is in my heart, and I desire and pray that it may be a success.

DR. CHARLES E. BENTLEY:

I do not know what Mr. Lynn may have in his mind with reference to a definite plan for carrying out some of the ideas that have been brought forth in the discussion and so lucidly in the paper. I will be glad to hear that plan. I do not want to be counted as pessimistic in what I may say, but would rather be put down as a conservative in reference to this grand ideal toward which we are all reaching and concerning which we are all intensely interested.

To begin with, there is no doubt but that an institution for scientific research along the lines indicated in the paper would be most desirable and profitable. It would be the realization of a dream that dentists have had for years and years. It is possible of attainment, but in my opinion that is only possible after we as a profession have done *some things*. As a profession we are young and our youth may account for our enthusiasm and our dreams, but with our youth, with our enthusiasm, with our virility we possibly may overreach ourselves in our ambitions.

Dr. Johnson says the first thing we need is money, and the second thing we need is money, and the third thing is more money. There are generous hearts in this community, there are men of tremendous philanthropic impulse who have only to be convinced that a thing is good and needed and their purse strings are unloosened, but they must be convinced. There are many demands

upon the philanthropic men of this community, demands of social service which is just commencing to be organized; demands of human problems that have just begun to be understood, and in order to get them upon a scientific basis where a maximum of good and a minimum of harm may be done to society, these men are willing to loosen their purse strings in order that things may be obtained; and yet they must be convinced that any plan which is offered to them is practical and feasible in all details. With all these problems and with all these appeals to these philanthropists comes our plea and our plan. What have we done to prove the faith that is in us? What have we as *data* that will convince the men of money that the things we say are true. Can we positively say or positively prove that all of the diseases having constitutional manifestations have their origin in the mouth or diseased conditions of the mouth? Can we prove this beyond peradventure? Can we prove by scientific deduction that caries of the teeth or pyorrhea are as detrimental to life as we think they are? Have we the data at hand? I believe that the conclusion that must have been reached by the scientific paper which was read by Dr. Mayo the other evening was this, that we as dentists, looking at this question through a special lens, must at least give way to an element of doubt as to whether all we claim is true or not. That is a statement you may challenge, yet I simply want to say this, that it is as yet a *mooted* question, a debatable question, whether all of the ills we claim are traceable to the various diseases indigenous to the mouth. This brings up the point I am trying to make or to amplify which is that we must have positive data to present to hard headed business men whose purse strings are liable to be loosened for a philanthropic movement, as well as to have positive data to present to them that the things are absolutely unquestionable facts if we hope to seriously interest them. If this be true then it is necessary that we should get to work and secure this data and get it classified in such a way that it will stand the test of investigation, and when we have these facts correlated and classified in a way that there can be no question about them, then it would appear that we would be in a position to give the monied men and philanthropists facts that cannot be disputed.

One of the most pathetic utterances towards the consummation of this endeavor was the testimony of Dr. Frederick Noyes. We

are compelled, the vast majority of us, by the very stress of circumstances and conditions and the atmosphere in which we live, to make money. That is the primal instinct with every professional man, and according to the testimony of Dr. Noyes, who has had experience in both lines of endeavor, "in order to make money he must give up research work, or do research work and not make money." Therefore, as men engaged in the practice of a profession we are almost incapacitated to do research work, provided philanthropists will give us money to start a research institution.

Again, it demands more than a man simply giving his time to become an original investigator. He must have an aptitude, a training, if you please, to become an original investigator. One man looks into a microscope and sees one or two or three brown or red spots which convey no intelligence to him. Another, a trained observer, looks into a microscope and in those one or two or three red or brown spots he sees myriads of things that convey to him great intelligence. Why? Because his intelligence and eye have been trained, and his scientific mind has been trained to correlate the facts and to interpret them. I am ashamed to admit it, but dentists, as a class, are not trained observers in scientific matters. Therefore, if we have a research institution given to us, where are we going to get the investigators? It occurs to me that this noble band of men who have contributed so much to the forward movement of dentistry in this community and its contiguous territory can start something, so to speak, that will be the equivalent to the ideal that has been presented in the paper and the dream that Dr. Woolley has had on his mind for ten years. This movement needs not only the support of the Odontological Society back of it, but it needs the support of every society in this city and state. This society is responsible for the establishment of dental clinics in the public schools. Why not add another jewel to its crown and say this society may be responsible for the beginning of a research institute that will ultimately come as a result of its initiative in this matter. My suggestion is this: that you coöperate with the Chicago Dental Society, and with the Englewood Society, which is now incorporated with the Chicago Dental, and with the state society in establishing what is called a *Research Committee*.

Let that research committee go to the men who are preëminently trained with their fingers, eyes and intelligence and give them

definite work to do, and that work can be done right here in the *University of Chicago*. The research committee can indicate one particular line of investigation to be carried on. For instance, the possible relation of sulphocyanide to dental caries, or the possible relation of saliva to erosion, or possibly the cause of infection, or the possible relation of infection of a pyorrheal pocket to the human organism or any other subject you may indicate. The committee can definitely propose the subject which the investigator or investigators may take up. You take the subject to the biologist, the bacteriologist, the physiological chemist or chemist at the *University of Chicago*, who has all the paraphernalia that we would not know how to buy, who has a trained intelligence, trained eyesight, and a digital dexterity that we can hardly hope to achieve, because we are not engaged particularly in that work, pay him for it, give him supervision over the line of work and investigation, and let him at the end of the year present to this society or to the *Chicago Dental Society* or the state society the results of his investigations, and then he will not have spent years and years in a line of original research and at the end of it put up the placard, as Dr. Noyes says, "This road leads to nowhere." The practical scientist in the *Chicago University* knows that road because it has been printed in the literature. He will not expend his energy in that direction. That is one practical way by which we can reach something definite in the line of research. That is my contribution to this discussion.

I am a little chary about going to men and asking them to open their purse strings for the establishment of an institution for original research when we have so little data or so little cause that is not beyond doubt; for if you will pardon a personal allusion, I will say I am more actively engaged in social work today outside of my professional work than in anything else, and I am and have been in touch with such movements as Mr. Rosenwald and Mr. N. W. Harris and others are interested in, who, when they sit around a board of this sort, want to know the facts in the case before they become at all interested, and when they become interested, and the facts are produced, and the cause is human, they very readily open their purses. I desire to see this thing consummated, and I hope the plan that is to be presented will eliminate all these possibilities. But as I see it, the way to begin is not to begin at the big end, but the small end, and let these men who are

willing to do this thing, or know how to do it, do it effectively.

The most effective book written in dental literature in the last decade is that by Pickerell away in the antipodes, and what he has said on the scientific side of saliva and sulphocyanide, concerning which we know absolutely nothing, has swept every book from the library written on it before, and here we are just at the beginning, according to Pickerell. In an article read in New York by Professor Gies of Columbia University, who was employed by the state society of New York to do original investigative work, it is stated that he spent a whole year on the possible relation of sulphocyanide to dental caries. He has found simply the starting point from which other investigations may be conducted. So we are beginning. We have not the facts yet, and in order to get them we must give them into the hands of men who know how to hunt facts and interpret them.

My suggestion again, if you will permit me to recapitulate, is that this society start a research committee in conjunction with the other societies, city and state, and have this research committee employ scientific investigators in the Chicago University, where they have the paraphernalia and equipment necessary for these investigations, and then we will begin to have some facts to lay before the philanthropists, and when the plan is amplified we will have justification in asking them for this money.

DR. WALTER M. PRUYN:

I was very deeply impressed with Dr. Johnson's paper. He mentioned what Dr. Miller had done in Berlin and how much he had accomplished by the aid probably of the scientific atmosphere with which he was surrounded. While he was reading the paper I was thinking of how many more Dr. Millers there might be in this country today if we had just such a scientific atmosphere in different localities. The idea I want to bring out is with reference to preventive dentistry. Since I graduated I have heard more about preventive dentistry than I did in all my whole school course, and, it seems to me, the big question which confronts dental societies is not repair work but preventive dentistry, and the thought occurred to me of how many more students there are who have the privilege of entertaining the same ideas that I now have; how many students would probably, if scientifically inclined, make discoveries or delve into microscopic work along these lines if they

realized this when they were students in the University. In Washington some years ago during a pedagogic meeting they spoke of lengthening the school term from three to four years. I do not know of any more important subject which could be embraced in the fourth year than preventive dentistry. As soon as our dental colleges and the thinking professors realize that they must train new students to become future scientists, I have no doubt that something will be accomplished in the line of preventive dentistry. Preventive dentistry is the subject before the minds of the people today, as well as oral hygiene. If a little more pressure and attention were directed to this subject rather than on some of the other branches, we would get more scientific men to find out facts. That is what we need, and an Institute for Dental Research will undoubtedly be an important factor in obtaining the knowledge we seek and raise the standard of dentistry very materially.

DR. J. G. REID:

I do not think the essayist has overdrawn the idea he had in view to present to this society, and while he has been enthusiastic in presenting it, we must not forget the fact that in beginning any movement, I do not care what it is, we must have some enthusiasm behind it to get it started. It requires continual enthusiasm to keep a thing moving. Dr. Bentley is inclined to be a little pessimistic rather than conservative in regard to this movement. We are not starting at the big end of this movement at all, but at the little end. I think we have data for a foundation on which to build, and it has been started in the mildest and most conservative way for future progress.

I have been in the profession a good many years, and this subject is not an entirely new one to me. I heartily concur in what has been said that the profession of dentistry lags in its scientific attainments. We have paid a good deal of attention to the preservation of teeth, and we have made great progress in fifty years in our ability to preserve them. But we have certainly made very poor progress in finding out the causes of disease and the destructive organisms of the teeth. The profession of dentistry is one of constant and hard labor, both mental and physical, and a man who is engaged in active practice has all he can do to take care of that practice and do his work right and well, and naturally he has got to put aside the scientific features of it, and it is necessary

to have someone who will follow research work, who does not think of anything else but the scientific side before him. That should be his life work. There are but few men who are qualified to do that. We have got to have that inherent qualification in the individual himself. Scientific men are not made. It is born in them. It is the inquisitiveness of their own nature that induces them to seek and find out things. There are not many who have that distinctive qualification. Let us take Dr. Noyes. He has been engaged in dentistry for a great many years, and yet he has been laboring all these years to try to find out something. Dr. Cook has done the same thing for years and years. He has been laboring in a quiet way, without any great bluster, along the line of research when most of us have been asleep. It is natural for him to carry on investigations. He has a particular bent in that direction. He is particularly interested in bacteriologic work. He likes that sort of thing and cannot get away from it. We can point to four or five men in the city of Chicago who have been in the practice of dentistry for many years who are actually qualified to do scientific work. You can count these men on the fingers of one hand, so far as my knowledge goes. There are few men who possess the distinctive qualifications to do this work. We cannot make poets; they are born. Dr. Case is an expert in his particular line of work, and so it goes through the whole profession, there being only a few who are adapted for and have the qualifications necessary to take up and successfully carry on a particular line of work. A man does not have to be a dentist to carry on these investigations, but he must be well grounded and trained in the scientific principles of investigation, and he can accomplish results if he has the elements of investigation and the spirit of true science in him. It enables him to see what ought to be done. The way to get this movement started is to go at it in this quiet way. We all have our views about it. I do not know that Dr. Bentley's view is a good one. It is new. I had not thought of it along the lines he has presented. It is a suggestion, and we are here to receive suggestions. I am satisfied it will not require very much money to go on with this work when it is started. I believe we can approach some good men to start in this work if they could be persuaded to quit practicing dentistry, law or medicine. If we were to say to them we will give you

something to live on so that you will not have to suffer, I believe there are some men who could be persuaded to take up this research work. There are probably half a dozen men who are fully qualified to carry on studies and investigations of this character for \$8,000 or \$10,000 a year. I do not know what can be done in the way of securing money, as I have never been put in a position where I have had to appeal to some philanthropist, and I do not know how hard it is to influence them to release their purse strings, but at the same time I am satisfied we have some very good reasons and substantial data to present to them.

DR. GEORGE W. COOK:

This subject has been interesting to me from several angles. Dr. Noyes has touched upon one of the principal angles, namely, the so-called research end of dentistry. Dr. Bentley has touched upon another phase of it, both of which phases lead up to certain thoughts. We all see the need of this movement, but the question we are here to discuss is, how can we accomplish it? Dr. Bentley tells us that we can go to the Chicago University or send a committee there to carry on investigations. Can the physiological chemist, microscopist, zoologist, paleontologist, or whatever he may be, help the investigator in the direction in which he may want to go? We think of research as a mere matter of getting out a microscope or test tube and beginning to investigate the particular thing itself. Dr. Bentley has laid stress on the fact of how a man's interpretation may go astray if his work is not directed by someone who is properly qualified. That is very true. One man can see a thing and put an interpretation on it; another man may see the same thing and put an entirely different interpretation on it. We see this in the discussion of every scientific article that appears in dental or medical journals and in all literature pertaining to any calling. We find there are men who are very much in advance of others, and on this account a controversy arises, and that controversy has to be worked out in the minds of men as to whether their interpretation is correct, or whether the interpretation of other men is correct or not. All of this calls for the very thing that the dentist has not got to give, and there are certain men who can do this work properly and efficiently if they know that they have not got to practice dentistry or medicine for a living.

I could go, and Fred Noyes could go, or any other man could

go to the Chicago University and work there as long as we live if we had something to live on. The Chicago University will not pay to investigate any particular subject. It will not pay a man to investigate the cause of dental caries or erosion, or pyorrhea alveolaris, or the various infective conditions that may arise in the mouth. They have not the money to pay a man to follow out simple lines of research. They pay men for research in certain particular subjects, and it may take a man years and years to know anything about a certain subject—a certain general subject, but he would pay no attention to any specific thing in general unless attention was called to it, and he had some incentive to work in that direction.

As to the idea of appointing a committee from the Odontological Society to wait on a similar committee from the Chicago Dental Society and the Chicago Dental Society to appoint a committee to wait on the State Society, it is a very good one, and I have no doubt would accomplish something, but the more people you get on any committee the more unwieldy it becomes, and the more difficult it would be to attain a definite thing which we want, and that is assistance. We are not asking for appropriations to establish a great research institute, to build a large building and equip it, but we want assistance to send Dr. Noyes, for instance, or some other man to the Chicago University and pay him a salary so that he can put aside his everyday professional work, and not feel that he has got to catch a certain train or to make a certain appointment to make a living. Let him put aside that and let him engage in the work of investigation. If we have lots of money we could send two or three men to the University to make investigations. We could get one man working in one direction, another man in another, and then some day valuable results or discoveries might be made. But it is the matter of starting we are to consider. We are here to establish a plan by which we can have efficient men who can carry on this work and find out what can be accomplished by research work and by the assistance such men would get in certain lines of work. By means of such investigation subjects that are now obscure might be cleared up, and the results of such investigations would be extremely valuable.

Reference has been made to Dr. Miller and his environments, the statement being made that his environments had a good deal to do with his scientific work and what he accomplished. You are

doubtless familiar most of you with the environments of Dr. Black. He had the environment of the woods and fields. Miller had the University of Berlin as an environment in which to do his work. He accomplished a great deal. It was just as good for Black to have been where he was, and he accomplished a great deal in that environment. Our environments are what we make them ourselves. If you have not got the inherent desire in you, it cannot be instilled into you. They cannot inject it with a hypodermic needle or syringe. These are the things we have to figure on. This committee will have to find out the man or men who are capable of carrying on this work and have them follow out certain lines of investigation. What have you got to pay such men? To carry on research work it is very essential that men be paid adequately for their services.

DR. ALEXANDER G. WEISZ:

I have been very much interested in Dr. Johnson's paper. If we wish to do research work, it is necessary to have a building of some kind that we can call our own. We need to get microscopes and a hundred other things to carry on original research work, and when we get this equipment professional men will get busy and will be only too anxious to work there. Nine times out of ten it would be hard to get them away from it.

Dr. Johnson has impressed upon us the importance of getting money to start with, and then more money to carry on the work. Money is very essential to bring about results. I firmly believe we can get money if we show enough enthusiasm in connection with this movement. Very little, however, can be accomplished if cold water is thrown on the project. I do not know whether I am right or wrong, but that is the point I would make. I do not think a movement of this kind can be started without a home.

DR. C. S. CASE:

I do not believe we will have much difficulty in raising the necessary amount of money to finance a laboratory of original investigation as soon as it can be shown that something of practical advantage to humanity can be accomplished in this way. The thought has been expressed very forcibly tonight, that it is not so much a money question as it is the securing of men who are peculiarly fitted for this work. Dr. Black spoke of this the other night at the dinner given to Dr. Piperno. For the information of Mr. Lynn, I will say that this movement is not confined to the Odonto-

logical Society of Chicago, but is one that is spreading all over the United States. The proposition of starting a laboratory or a department in connection with some university has been brought up in several societies to my certain knowledge in a forcible way, and discussed as it has been here tonight. At one other meeting which I attended in Chicago, the entire work of the evening was devoted to this subject. When in New York recently at the general get-together dinner of all the dentists in that locality, several men who spoke advanced the same ideas in their speeches which we have been discussing here tonight. Not that the meeting was for that purpose, but it showed what they had in their minds and what they had probably been discussing at other meetings. In a little dinner given afterwards the subject was quite prominently discussed, which convinced me that the New York dentists have the same ideas, the same anticipations, and the same hopes that have here been expressed in the Odontological Society. Dr. Callahan, of Cincinnati, told me recently that one of his great hopes was to interest the societies of his town in starting original investigation work pertaining to dental diseases.

I am quite in accord with what Dr. Bentley has said. The real object we are striving for is for the benefit of the whole dental profession and for humanity. I do not think we need to try and retain this work within this society or the Chicago Dental Society or even the Illinois State Dental Society. In my opinion there should be a general co-operation of societies all over the country, because the time is certainly ripe for this work, and the conditions seem to demand it.

DR. J. H. WOOLLEY:

Dr. Case has just called our attention to the different organizations that are thinking of and discussing this movement for dental research. While a good many dentists are thinking about it, the only thing to do is to concentrate our forces so that something tangible may be accomplished. Let us take, for example, Ehrlich of Germany. Physicians knew what immunity was, but they had no plausible hypothesis to explain the phenomena. His experiments led to the explanation of the phenomena. There are enough causes or foci of diseased conditions to prove to the minds of thinking men that there is need of investigation. "Dr. Koch, when he began his "investigations in regard to tuberculosis, thought he was not capable "of doing very much, but he kept on and things kept growing larger

"and larger until finally he gave to the world his discovery of the "cause of tuberculosis. It seems to me, that members of faculties "of our dental schools can pick out the young men from their classes "who have a scientific bent of mind and who would be likely to be "qualified to carry on this work." Dr. C. N. Johnson's paper tonight has been one which is forceful, and ought to convince the most skeptic.

Mr. Lynn has generously offered his legal advice towards organization and has made a vigorous and convincing argument favoring the movement.

MR. S. F. LYNN:

I have been edified by the remarks of the various gentlemen, and while Brother Bentley has sounded a note of warning, I thought it was a timely and practical suggestion. But we must not look at the pessimistic side of it, we must turn our faces towards the rising sun and go to somebody who will father this child. If we can get someone to father the child, no matter how ugly it is when born, he will stay by his hand, so to speak and continue to father the child. If too many men father the child the parentage will be in question and no one will care for it.

I feel that this occasion is historic. I feel some steps will be taken here tonight that our children will read about. From what has been said, I know there are men here tonight who are capable of doing the very things that Dr. Bentley suggested ought to be done. I think Dr. Bentley himself could offer suggestions with reference to this movement in such a forcible way as to induce some philanthropist to father this child.

There are men here tonight who can suggest the nature of the researches that should be carried on in the profession if some philanthropist will put his money into this movement. There is no question but what we must have money. It is a difficult thing to carry on this work and furnish the means yourselves. Let me make two or three suggestions in order to put the matter before you in a concrete way. I would suggest that you appoint a committee, have a banquet, have a philanthropist attend it, and have such men as Dr. Bentley and others (I simply mention Bentley's name because I know him) impress upon him the necessities of your profession and the probabilities are he would advance the money to carry on the research work. I believe Dr. Bentley could do this himself.

There is one topic which should be elaborated which would

show the necessity of such a movement. I refer to the disease pyorrhea alveolaris. What is the origin of that disease? Is it systemic, local, or what is it? I have heard some dentists say it is local, others that it is systemic and must be treated through the system, and still others that by skillful manipulation they can eradicate the disease. Rigg's disease is one of the most dreadful diseases known to dentistry. If that matter were put in scientific language, like Bentley or some other equally scientific man could do it, to this philanthropist he would see the necessity of research in this matter.

I have no cut and dried remarks, but I want to refer to what they are doing at the Rockefeller Institute for medical research in New York. That institution was founded in 1901. It has existed for a dozen years, and it was started with a donation, I believe, of two hundred thousand dollars for the first year. Since that time there have been endowments swelling the fund to ten millions of dollars. That institution is world wide in its scope. It furnishes other institutions the means with which to prosecute researches. It has hospitals and clinics and everything of that sort, and hundreds of things which are not necessary in the prosecution of those researches which you propose prosecuting. To particularize, what you want is to organize your society. First, you want to impress someone with the idea of philanthropy in a sufficient degree to furnish funds to carry on these investigations because you cannot do it and earn your own living. That cannot be done. There must be gratuitous service rendered. These clinics must be free and the services rendered by the profession must be free. You must make an impression upon the capitalists or philanthropists and then organize an institution. You should have a board of trustees, a director of the laboratory, and have departments on experimental dental surgery, chemistry, biology of the teeth, pharmacology and therapeutics, and then you must have an administration, your manager and treasurer and a purchasing agent. You must have the purpose of your society made known to the public, and especially to the men of money whom you hope to interest in your enterprise. Tell them what the society is for; that it is not so much for the cure of disease as it is for the prevention of it, and the old adage. "An ounce of prevention is worth a pound of cure" holds good here. From the standpoint of a layman I would ask what can be more important than the teeth of the human being? Bad teeth are responsible for half the ills of the human race. You want a build-

ing in which to hold your clinics; you want a scheme for the admission of patients who would have to be admitted free, and when all these matters are laid before some gentleman who is anxious to spend his money and are explained to him, I believe he would father the movement. I believe there are a dozen men in Chicago who could be induced to father this child, as it were. Let it be known as an institute. This institute in New York known as the John D. Rockefeller Institute for Medical Research has done a wonderful good. Mr. Rockefeller has spent ten million dollars on this child. You doubtless know better than I what has been done by this institute. They have made an assault upon meningitis, and I believe have discovered a cure for it. They have been investigating hookworm; they have been investigating and treating infantile paralysis with great success.

What are the limitations of these investigations? There are no limitations to such investigations. I believe it can be done, and I would suggest that you appoint a committee to arrange for a meeting whether it be around a banquet board or otherwise, and invite not more than one or two philanthropists or monied men and the members of this society to it and make them understand it is to be their child and their own enterprise, and they will start something that will go around the world, as it were, in its far-reaching good for humanity. I believe this can be done, and I would suggest now, Mr. President, that you appoint a committee (not an unwieldy one) of two or three to formulate a scheme for reaching the prime desideratum, the capital, in order to make a home for this institution and to start it, no matter whether it is started with a small donation or a large one. But when a man of capital starts it, he will do the same thing that Rockefeller has done, first beginning with two hundred thousand dollars and then following it up with an endowment of eight million to ten million dollars. It is human nature to do it, and that is the way to get money to start this institution.

I will be glad to aid you in any way gratuitously in formulating this scheme, and in carrying it out if possible. We can start something here tonight that will go on and on until all the men that have been connected with it in its inception will be proud of it. I move, therefore, that a committee be appointed to formulate such a scheme.

Motion seconded and carried.

The President appointed Dr. C. N. Johnson, Dr. W. V-B. Ames and Dr. J. H. Woolley as members of this committee.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY

EDITOR C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL

LOOK OUT FOR THE PENDULUM.

The profession seems to run to fads and fancies, in fact all professions do. A man of some authority makes a statement and the lambs follow where the bellwether jumps. In the early history of the profession too many teeth were extracted. It was not unusual for a practitioner to condemn a tooth if it became abscessed, or "ulcerated" as it was then called—and by the same token it is so called yet in too many quarters. Thus numberless teeth were needlessly sacrificed and people were deprived of useful organs which were essential to their highest efficiency. This fact became apparent to the thinking men of the profession and they instituted a reform whereby the natural teeth were to be saved by treatment and proper filling. It became almost a disgrace to extract a tooth, and every effort was made to save them. Great good followed this propaganda and the people themselves were educated to appreciate the value of a natural tooth and the possibility of saving it even after it had become affected by disease. All sorts of medicaments and technical procedures were brought out to cure abscessed teeth, and the slogan went up that no tooth should be sacrificed that could not be extracted with the fingers. Article after article was published also on the treatment of teeth affected by pyorrhea; and there

was the most laudable attempt to prevent people from suffering the necessity of wearing artificial dentures.

This was a move in the right direction, but like many other praiseworthy efforts it was carried too far. All teeth could not be cured of abscess or pyorrhea, and many of them were nursed along for years with pus discharging into the mouth in the vain attempt to eventually cure them and in blind subjugation to the dogma that natural teeth should not be extracted till they became hopelessly loose. Little cognizance was taken of the possible ill effects of pus being absorbed into the system and causing constitutional affections. Recently there has been an awakening, and now look out for the pendulum. It is likely to swing back to the dangerous days of too free extraction. Papers have been read and fully discussed on the evils of systemic infection from abscessed and pyorrhea teeth. Men are holding high their hands in horror at the "sepsis traps" of artificial crowns and bridges, and woe betide the man who has the assurance to stand up and say that there are sanitary crowns and sanitary bridges. But there are. True as it is that many teeth have been retained in the mouth when the best interests of the patient would have been subserved by their extraction, and also true that there have been many crowns and bridges that were a menace to the patient's health; the fact still remains that many diseased teeth, in fact we are safe in saying that most diseased teeth, can be made healthy by proper treatment, and that crowns and bridges may be so constructed as to be cleanly and advantageous to the patient. Let us not recede from the high ideals of our immediate predecessors who valued a natural tooth beyond the estimate of money, and who contended for its salvation to the last extremity. By all means let us learn the lesson that it is not safe to leave pus pockets in the mouth. Let us eliminate the pus even at the expense of losing the tooth, but let us first stand by the conviction that it is seldom necessary to lose the tooth in order to control the pus.

A short time ago a prominent medical man read a paper in which he traced rheumatic affections in some cases to diseased tonsils. Instantly all over the land tonsils began to be slaughtered by the wholesale—innocent and guilty alike they fell before the irresistible sweep of a passing craze. Before the pendulum swung back to normal the land in certain sections was strewn with tonsils, some of which would have served a better purpose in the economy

of life if they had been allowed to remain with the patient. The same thing will hold true of the teeth unless the good sense of the dental profession prevents it from stampeding at a critical moment. The old adage is a safe rule to follow: "Prove all things; hold fast to that which is good."

SCIENTIFIC FOUNDATION FUND OF THE NATIONAL DENTAL ASSOCIATION.

The committee having this matter in charge under the able chairmanship of Dr. W. A. Price of Cleveland are making most encouraging progress in securing funds to carry on original research work. The plan is to obtain a pledge from the profession to pay in the equivalent of one dollar per year for each member of the profession for five years, by which time there is no doubt that endowments will be available to make the work permanent. It is self-evident that every member of the profession cannot be reached and it will remain for the part, as it does in every similar movement, to carry the burden of the whole. But this does not imply that a few men can make sufficient contributions to finance the entire movement. If it is to be brought to its greatest usefulness it will require the help of a large proportion of the profession. Some men have already most generously pledged themselves to furnish sufficient funds to take not only their own share but to take that of many others in the profession who cannot be reached. In this way it is hoped to cover the entire field and inaugurate a movement which will be worthy of the profession. The chief burden must of necessity fall on members of dental societies, and yet there is no reason why any man should not contribute whether or not he is a member of a society. The direct benefits of all such original research will go to every man who practices dentistry, and all should assist to their capacity. Such problems as dental caries, erosion, pyorrhea, etc., are sadly in need of clearing up, and it will require a great deal of original research to place us in a position to combat these diseases and to prevent them. The least that a man should do is to contribute a few cents of his yearly earnings to carry on this very important work. The money will be safeguarded most carefully and every cent accounted for. Dr. Price is putting great energy into the work and sacrificing much time. If all of us would

only do one-tenth the part that he is doing every day there would be no question about the necessary money, and the moment the money is forthcoming all plans are laid to put the movement on a practical footing. Send in your contributions to Dr. W. A. Price, 10406 Euclid avenue, Cleveland, Ohio.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the April issue.)

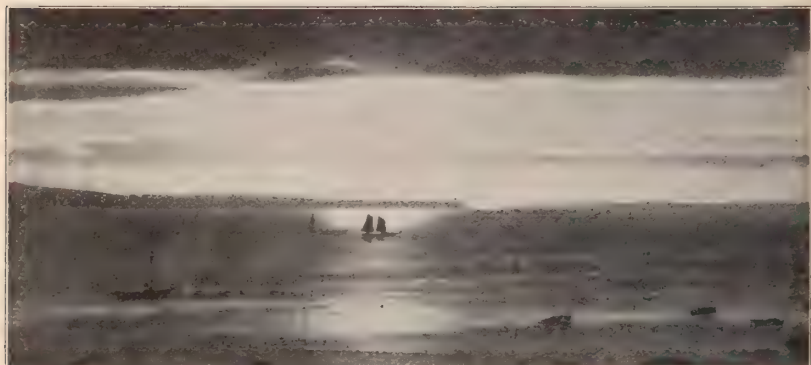
AUCKLAND, NEW ZEALAND.

Our next stop after the Fijis was Auckland, N. Z.—a run of only four days—just the merest trifle. After one has been on board ship as long as we were, four days is a bagatelle—simply a week-end excursion.

It was at Auckland that I heard the most delightful music I have ever listened to. All the way across we had the ship's orchestra at dinner and enjoyed it in no small degree, but this music which floated across the water as we lay in Auckland harbor in the early morning surpassed for sweetness anything my poor ears have ever heard. And what do you suppose it was? Merely the whistle of a railway train on land! I never thought I should enjoy that sound, but that morning it was more musical in my ears than any Aeolian harp. Verily, brethren, three weeks on the sea may materially change one's tastes.

Ever since I was a boy I had heard of New Zealand and was naturally interested to visit it. I of course expected to see nothing but strange faces on the dock as we pulled up, and was leaning with my side against the rail talking to the ship's surgeon, when he suddenly said: "Doctor, there is some one waving at you from the shore." I looked and—gracious, how small the world is—there I saw frantically fanning the air my friend Dr. C. G. Long, who had been to Chicago only a year or so ago. By his side was Mr. J. G. H. Mackay, who had spent several months in America, and whose face was as familiar as if I had met him on State street. In a moment our party was surrounded by representatives of the Auckland branch of the New Zealand Dental Association, who had come down to the boat to welcome us. After being officially re-

ceived by Dr. H. Cox, president of the branch, Claude H. Moses, secretary, J. Norman Rishworth, president of the New Zealand Dental Association, and other members, we were placed in automobiles and driven all over the city and up through some fine parks to an elevation which commanded a view of the entire place. One thing struck me forcibly. Never have I visited any city which gave so little evidence of poverty. They have no slums in Auckland. All the houses are well built and are for the most part owned by the people who occupy them. They are nearly all painted white with red roofs, and the effect in looking down from a great elevation upon these beautiful homes is quite impressive. I am told that they have in New Zealand no pauper class—which is



A Morning Glimpse of Auckland Harbor.

surely a blessing to any community—and I am going to whisper in the ear of New Zealand an admonition to the effect that if they are to keep pauperism out of that fair land they must begin now to demand of the citizen who has been there long enough to get on his feet that he shall develop his own individuality and not depend on the government for aid beyond a necessary point. The governments of New Zealand and Australia are more liberal than any other I know in their treatment of the poor man who comes there to live. They will do everything in reason to put him on his feet, which up to a certain point is a most laudable thing to do, but I fear that if the government carries this fostering influence too far it will bring about a lack of individual independence which will eventually spell deterioration. I believe it to be just as bad for the

state to do those things which properly belong to the individual as it is for the individual to do those things which belong to the state, and while in some countries the state does not do enough for its citizens, yet I think I see grave danger in New Zealand and Australia that it may do too much. The moment an able bodied man accepts something for nothing, that moment there begins in that man a disintegration of character which sooner or later saps his manhood and eventually drives him into pauperism. But I



The Domain Auckland, N. Z.

did not come over here to reform these two beautiful countries, and must leave them to work out their destinies as best they may.

On one of the elevations we visited there was a large crater, extinct apparently for ages, and covered over with the most beautiful green. Here we saw the remains of the old embankments thrown up by the native tribes—the Maoris—in their last heroic stand against the whites. The whole history of the natives in this part of the world, whether Hawaiian, Fijian, Samoan, or Maori, is, as it ever has been in the advance of our so-called civilization, most pathetic. I hope to consider the Maori people more in detail later.

After the drive I was tendered a luncheon by the Dental Society, and then visited the Dental Hospital and a very interesting collection of models and skulls at the office of Mr. Arthur M. Carter. He is doing an excellent work which will be better known in the future.

When I reached the boat that evening after a most delightful day I received many letters and cablegrams from Australia, some from men I knew, many from men I did not know, all bidding me welcome to Australia. No one who is not a pilgrim in a far land can know what this sort of thing means. I shall never forget my sensations as the boat sailed from the Auckland dock, leaving behind me the waving handkerchiefs of friends new and old, and going out into the last lap of the long journey toward a land which I knew was extending its arms to bid me welcome.

It is another four days' run from Auckland to Sydney, and this is my last opportunity to say something about the personnel of the people on board the *Makura* on the voyage out.

Never have I met a more delightful company. The ship's officers and crew numbered 196, while the passenger list ran to nearly 300. All were apparently bent on making the trip enjoyable, and I have seldom seen more fun crowded into a few weeks. The weather was exceptional, only a couple of blows disturbing the even tenor of the voyage. The most severe of these was in the Tasman Sea between New Zealand and Australia. Captain Gibb informed me that I might take a thousand voyages and not get another equal to this, and the chief steward Mr. Read claimed that I must be a mascot, and suggested that I travel always with them. But I find I have other things to do in the world beside regulating the weather on the Pacific.

I wish I might mention the name of every passenger on the boat. As to nationality it was a mixed list, Britishers, Canadians, New Zealanders, Australians, and Germans, with a fair sprinkling of Americans. But there was no distinction on board the *Makura*, and those of us who came from the land of the Stars and Stripes were made to feel as much at home as if we were under our own vine and fig tree. On the 4th of July the orchestra played many American airs, and we had our tables decorated with the Stars and Stripes. It was a graceful tribute to sojourners in a strange land, and was keenly appreciated. Association on board ship is so inti-

mate and constant that friendships are formed in a few weeks which otherwise would take years, and today as I recall the splendid times we had I am charmed by the memory of many of those faces. I can see the big, bluff Londoner, fair haired and happy, giving a nickname to every one on the boat, helping in all the games and sports, dressing as Nero for the masquerade, and lending life to the ship. May his shadow—which was not diminutive—never grow less. And then I see the New Zealander, keen, active, gentlemanly, accommodating, always ready for a game of deck quoits or shuffle-board—a true sport—and I am just wondering if there was ever a chap of British birth who was not at heart a sportsman. I shall never forget the manner in which he rushed up to me on the deck as we lay anchored in Auckland harbor, and taking me by the hand, said: "Welcome to New Zealand!" And I can see the Yankee boy with the shock of pompadour hair who kept the scores and was secretary of sports. And the other Yankee who when they handed him a cricket bat used it as if he were hitting a baseball. And the Australian boy who had been out to America for three years studying his profession and who was a crack at all kinds of sports—and besides who was so homesick as we neared Sydney that I wished I had a flying machine for him. And the Canuck who could not see for the life of him that the winters were too long in the Northwest. And the tall Belgian, looking ten feet high, ducking his head every time he passed through a door, having an awful time regulating his stomach which he stuffed with everything, and a supercilious contempt for the point of view of every one else on earth—he was most delightful. And the German boy who pretended that he couldn't speak English so that he might have the young ladies teach him. I can see them all—and how I wish I might see them in person instead of in fancy.

And then we had some celebrities on board, Miss Eva Mylott, the noted Australian singer, going back to her native land after a triumphal tour of eight years, going back to face a reception at Sydney, which showed the hold she had on the hearts of her people. And there was Principal Gordon, of Queen's University, Kingston, Ontario, one of the most sturdy and substantial men I have ever met, who conducted the religious services every Sunday, and whose gracious courtesy was well illustrated by the fact that although a Presbyterian himself, he, in consonance with the custom of the ship,

conducted the Church of England service—truly the world is growing broader and better. And Mr. J. Symonds of Sydney, who was just returning from a trip around the world—a civil engineer who has carried through some of the biggest government contracts in Australia, who has gone out and quietly done things which every one else said could not be done. We found Mr. and Mrs. Symonds the most delightful people, unostentatious, accommodating, and in all ways companionable. I am indebted to Mr. Symonds for much information regarding social and economic conditions in Australia, and I thank the lucky chance which made me acquainted with him. Miss Mary Proctor was also on board. She is the talented daughter of the late Richard Proctor, the eminent scientist, and was going out to deliver a course of lectures in Australia on astronomy. We found her a most modest, retiring and altogether delightful woman, and a credit to her distinguished calling. And the actor, Mr. Fred Niblo, going out to Australia with Mrs. Niblo under a six months' contract to put on such plays as "Get-Rich-Quick Wallingford," "The Fortune Hunter," "Officer 666," etc.—two charming Americans, whom to meet was a joy and whom to talk with was an education. One of the most delightful evenings I had on the ship was a chat with Mr. Niblo up in the music room long after every one had gone to bed. He is a type of true American who in his travels throughout the world will lend honor and distinction to his native land, and who is representative of the best among the many splendid people on the stage of the present day. What would I not give to have all these distinguished and delightful people around a banquet board in Chicago some day, to look into their faces again and to renew the ties we formed on the good ship Makura. And if this pleasure could be mine I should have at the head of the table that royal old salt, Captain Gibb—a rarer soul than whom I have never met. May the fates which fling destiny into the faces of sea-going folk be ever kind to this hardy mariner, about whom I could write a volume containing the essence of all there is to know of the lore of sea and land, spiced with the drollest wit and gentlest charm which were ever mixed with a manly heart. It is such men as he who are preserving the best traditions of the sea, and who are doing more to bind the nations of the earth in one than any other class. It was worth traveling across the Pacific to sit an evening with Captain Gibb and learn from his lips some of the mysteries of the ocean and

the heavens, the stars and the coral reefs, and the animal and insect life of the Southern hemisphere. I never expect to look quite upon his like again.

The fare on the Makura, as furnished by Chief Steward Read was varied and select as illustrated by the following menu which I selected at random:

R. M. S. Makura

July 5, 1912

DINNER

Pate de Foi Gras

Consomme Celestine

Potage Baraquine

Boiled Salmon, Sauce Hollandaise

Sweetbreads en Casserole

Chicken Cutlets a la Reforme

Roast Sirloin of Beef and Horseradish

Boiled Shoulder of Mutton and Caper Sauce

Boiled Fowl with Ham, and Egg Sauce

Asparagus au Beurre

Green Peas"

Jerusalem Artichokes

Roast and Boiled Potatoes

Nelson Pudding and Custard Sauce

Lemon Pie

Apricot Bavarian Cream

Paris Roll

Savoury-Anchovy Toast

Passion Fruit

Oranges

Canton Ginger

Assorted Nuts

Cheese: Cheddar

Gorgonzola

Stilton

Dutch

There were many dishes on the ship which were entirely new to us, and it was the Mater's function to try them and report. She was the gamest one of our party, and but for her we should have missed many a rare treat. The name of one dish was peculiar. It carried the euphonious title of "Bubble and Squeak," and it turned out to be merely fried potatoes and cabbage. Other misleading names were "Bombay Duck and Curry," and "Colonial Goose." If you ordered Bombay duck you got some kind of dried fish, and Colonial goose was simply stuffed mutton. Verily the ways of the world are peculiar. At Brisbane, Queensland, they had another which they called "Angels on horseback," consisting of a piece of bacon wrapped around an oyster and perched on a wooden tooth-pick skewer.

It was on the run from Auckland that Captain Gibb took me

out on the stern of the ship one evening to show me some wonderful sea fowl which were following us. Among them we saw a pair of albatross—the most remarkable birds I have ever seen. The specimens we saw were about thirteen feet from tip of wing to tip, and graceful as—as an albatross—which is the essence of all things graceful in the air. They sail along with apparently no effort and with very little perceivable motion of the wings. The only thing which seems to move is the extreme tips of the wings and these only a trifle. And yet the Captain estimated that with the weaving back and forth and continually keeping up with the ship they were making from seventy to eighty miles per hour. I have seldom seen anything more impressive, and this coupled with the beauty of their plumage—dark along the back, and intensely white underneath to the tips of the wings, which were dark—made them most interesting. Truly the sights of the South Seas keep an unsophisticated Northerner gaping most of the time.

C. N. J.

(To be Continued.)

OBITUARY.

DR. RUDOLPH BECK.

Dr. Rudolph Beck died March 15, 1913, of tumor on the brain. He was born forty-four years ago in Bohemia, and came to America at the age of 15. He made his way in the world, beginning a poor boy and attaining to a splendid position in his profession by virtue of the most painstaking application and a devotion to the highest ideals. In 1899 he was graduated from the Chicago College of Dental Surgery, and was afterwards appointed Professor of Dental Anatomy in this institution—a position he held at the time of his death. Dr. Beck was one of the most cheery and lovable characters in the dental profession, and he will be greatly missed by his immediate friends and associates in Chicago. Exacting to the last degree in the demands he made upon himself, he at the same time extended to others the utmost limit of his charity. He was a scholarly, well-read man—an ornament to the profession and to society at large. The world can ill afford to lose such a man, and to dentistry the loss is irreparable.

He is survived by three brothers, all physicians, Carl, Emil, and Joseph, and by two sisters, Mrs. David Winternitz, and Mrs. Buxbaum.

OBITUARY.

DR. J. AUSTIN DUNN.

DIED: At his home in Chicago, from angina pectoris, on April 9, 1913, Dr. J. Austin Dunn.

Dr. Dunn was born in Hinkley, Medina Co., Ohio, June 29, 1851. He was educated in the public schools of Medina and Columbus and began the study of dentistry under a preceptor in 1868. In 1884 he came to Chicago, and was graduated from the Chicago College of Dental Surgery in 1885. He was ex-president of the Odontographic Society of Chicago, a member of the Chicago Dental Society, the Illinois State Dental Society, the National Dental Association, and Delta Sigma Delta Fraternity.



J. AUSTIN DUNN.

Aside from his ability as a practitioner he was an inventor of many useful little appliances and devices which tend to add to the ease and perfection of many of our operations. He was a steadfast friend, a delightful companion, and a credit to his calling. He is survived by his wife and one sister.

OBITUARY.

DR. JOHN LEGGETT.

Dr. John Leggett died at his home in Chicago March 20, 1913, of apoplexy. He was born at Richmond, McHenry County, Ill., June 24, 1866; was educated in the Chicago public and high schools, and was graduated from the Chicago College of Dental Surgery in 1887. In June, 1888, he was married to Helen A. Ryan. Dr. Leggett

is survived by his wife and two children, Mrs. Ralph Hawxhurst, and Richard H. Leggett. He was a member of the Town and Country Club, the Chicago Dental Golf Club, and the Chicago Dental Society. Dr. Leggett was one of those great-hearted and companionable men who draw to themselves almost unconsciously the friendship and love of their fellowmen. He had hosts of acquaintances and every acquaintance became a friend. He will be greatly missed in the profession, not only because of his ability as a dentist but because of his genial qualities of mind and heart, and those who were most intimate with him will feel the loss the keenest. He was buried at Richmond and the pall bearers were chosen from among his classmates of 1887.

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

A Good Investment:—Mix half and half of plaster of Paris and asbestos fiber.—*Elias Frankel, Chicago.*

Just a Suggestion:—In sharpening pyorrhea instruments, round off the corners to avoid cutting any grooves on the roots of the teeth.—*E. B., Chicago, Ill.*

To Keep Hypodermic Needles from Rusting:—Dry the needle out with blasts of hot air from your switchboard or clip blower. Throw away your little wires and you will be surprised how long your needles will last.—*R. I. Lewis, D. D. S., Chicago, Ill.*

Before Investing Inlay:—When the wax model for a gold inlay has been trimmed to correct form and the surface has been carefully gone over with a very small quantity of oil of cajeput, wash off carefully and go over with liquid soap and water. Besides giving a beautiful finish to this wax, it will be found that the investment can be painted on the wax much more readily.—*E. S. Best, D. D. S., Minneapolis, Minn.*

Repairing Crown:—To repair a hole in a gold crown, which is made in removing a crown from the root, take some filling gold and amalgamate it with mercury, then pack it in and around the hole, afterwards holding the crown in a bunsen flame to drive off the mercury. Care must be taken not to inhale the mercurial fumes. Then place a small piece of solder on filling gold and fuse in bunsen flame.—*G. H. Henderson, L. D. S., D. D. S.*

To Hold Gold Inlays to Grind and Polish:—Many good inlays have been spoiled in grinding or polishing them, especially the small inlays. It is difficult to hold a small inlay against a revolving disc without doing some damage to the margins. I made a cylinder out of German silver, five-eighths inch in diameter and one inch high, capped one end. Fill up this cylinder with dental lac, forming a convexity at surface. Heat dental lac, press in the inlay, exposing surface to be ground and polished.—*Fred F. Schwartz, Senior Student, Northwestern University Dental School.*

Root Amputation:—Pyorrhea alveolaris, but another form of abscess very destructive in its nature to dental tissues, must be reckoned on as a source of danger leading up to the necessity of root amputation; this is especially true in connection with the multiple-rooted teeth. It is not infrequent that we find the lingual root of an upper molar entirely denuded of its natural covering, superinduced by deposits of salivary and serumal calculus; the same condition prevails with the roots of lower molars, one root only being effected, the second being in a state of perfect health and substantial in its socket.—*J. G. Reid, D. D. S., Chicago, Ill.*

Physiologic Action of Anesthetics:—According to more recent therapeutic conceptions, it is generally recognized that a drug or combination of drugs which simultaneously produce local anemia and inhibition of the sensory nerves in a circumscribed area of tissue is the logical solution of the question of local anesthesia. Certain important factors, however, relative to the physiologic and physical action of the solution employed for hypodermic injection upon the cell govern the successful application of such methods. It is of prime importance, therefore, to comply with the laws regulating the absorption of injected solutions—osmotic pressure.—*Hermann Prinz, M. D., D. D. S., St. Louis.*

A Hint to Dentists:—The life of a dentist is made happier and longer if when getting up in the morning you breathe deep and long for several times; stretch your body, as a cat does, then do Swedish system gymnastic exercises five to ten minutes, then rub your body with a towel before you put your clothes on. If you do not belong to that "I am too busy" class dentist, take a shower or tub bath before this friction bath to refresh yourself; also relieve your patients from unpleasant odors. Never deceive yourself by thinking that you are getting enough physical exercise in work, because we do exercise very few muscles in our daily work and let the rest of our muscles get out of use. It is a good investment for our physical welfare to spend ten to fifteen minutes every day of our time of doing physical exercises.—*Michael Diratsouyan, Smyrna, Turkey in Asia.*

To Render the Articulation of a Full Upper and Lower Denture Perfect:—After the dentures have been worn for about three days or more, to enable them to go properly to place, proceed as follows: Ask the patient to close the teeth tightly on a piece of soft thin modeling wax. Remove the dentures and mount correctly on an anatomical articulator, such as the Twentieth Century. Make a paste of carborundum powder and oil and smear it over the occlusal surfaces of the teeth. Simulate the movement of the jaw by moving the upper in every direction against the lower, pressing firmly at the same time. In this way the carborundum powder will so abrade the opposing surfaces as to produce an absolutely perfect articulation.—*A. Dangar Burne, Sydney, N. S. Wales, Australia.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

AMERICAN SOCIETY OF ORTHODONTISTS.

The 13th Annual Meeting will be held in Chicago, June 30, July 1-2, 1913. Dr. Frederick C. Kemple, 576 Fifth avenue, New York City, Secretary.

SOUTH DAKOTA DENTAL SOCIETY.

The Thirty-first Annual Meeting will be held at Watertown, So. Dak., May 13 and 14, 1913. A. O. Stutenroth, Secretary, Watertown, So. Dak.

ILLINOIS STATE DENTAL SOCIETY.

The Forty-ninth Annual Meeting of the Illinois State Dental Society

will be held at Peoria, May 13, 14, 15, 16, 1913. Chas. M. Smith, Chairman Local Arrangement Committee. Dr. Henry L. Whipple, Secretary, Quincy.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The next annual meeting of the Association of Dental Faculties will take place at the Hotel Baltimore, Kansas City, Mo., beginning at 10:00 a. m. on Friday, July 4. The Executive Committee will meet at 9:00 on the same morning at the same place. B. Holly Smith, Chairman, Executive Committee.

ALUMNI ASSOCIATION WASHINGTON UNIVERSITY DENTAL SCHOOL.

The Alumni Association of the Washington University Dental School (Missouri Dental College), St. Louis, Mo., has decided to withdraw the annual clinic for 1913 owing to the proximate date of the next session of the National Dental Association at Kansas City, Mo. R. H. Miller, D. D. S., Chairman Publicity Committee.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Iowa State Board of Dental Examiners for the examination of candidates will be held at Iowa City, commencing Monday, June 2. For application blanks and particulars, write the Secretary, J. A. West, 417 Utica Bldg., Des Moines, Iowa.

NATIONAL DENTAL ASSOCIATION.—SOUTHERN BRANCH.

The 15th Annual Meeting of the Southern Branch of the National Dental Association will be held at the Chamberlin Hotel, Old Point Comfort, Va., July 22 to 25, inclusive. The Virginia State Dental Society will hold its meeting conjointly with the Southern Branch at that time. Thos. Moore, Jr., Cor. Sec. Southern Branch N. D. A.

MINNESOTA STATE DENTAL ASSOCIATION.

The thirtieth birthday of the Minnesota State Dental Association will be celebrated by a large clinic and manufacturers exhibit in Masonic Temple, Minneapolis, Friday and Saturday, June 13 and 14, 1913. A rate of a fare and a third has been granted by the railroads, and a large meeting is assured. For information, address Benjamin Sandy, Secretary, 636 Syndicate Bldg.

THE SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

The Sixteenth Annual Meeting of the Southern California Dental Association will be held in Los Angeles, on the 26th, 27th, 28th and 29th of May, 1913. An excellent programme of Essays and Clinics, as well as a large and elaborate exhibit is being arranged. All ethical practitioners of Dentistry are cordially invited to be present. Further information will be sent upon request. James D. McCoy, Chairman Publicity Committee, 708 W. P. Story Bldg., Los Angeles, Calif.

OKLAHOMA STATE DENTAL ASSOCIATION.

The following officers were elected by the Oklahoma State Dental Association at its recent annual meeting: President, R. S. Parsons, Oklahoma City; first vice-president, N. C. Woods, Ardmore; second vice-president, A. B. Potter, Oklahoma City; treasurer, A. B. Walker, Fairview; secretary, C. R. Lawrence, Enid. The society unanimously voted to continue the post-graduate feature of the meetings which is proving to be very interesting and profitable. C. R. Lawrence, Secretary.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The Thirty-first Annual Session of the National Association of Dental Examiners will be held at the Baltimore Hotel, Kansas City, Mo., beginning July 7, at 10:00 a. m., and continuing until adjournment. Every State Board

holding membership in the Association is earnestly requested to have at least one representative present at this session. Members of all State Boards are invited. Hotel reservations should be made immediately. John P. Stiff, Pres., Fredericksburg, Va.; T. A. Broadbent, Sec'y, 15 E. Washington St., Chicago, Ill.

COLORADO STATE DENTAL ASSOCIATION.

The Twenty-seventh Annual Meeting of the Colorado State Dental Association will be held at Manitou, Colo., June 19, 20, 21, 1913. The clinics will be in charge of Dr. A. W. Starbuck, 1340 Arapahoe St., Denver, Colo., who will furnish any information relative to same. Exhibitors desiring space will please address Dr. F. P. Wells, Exchange National Bank Bldg., Colorado Springs, Colo. All ethical members of the profession are cordially invited to attend the meeting. Any other information will be cheerfully furnished by the secretary. C. A. Monroe, 302 Mercantile Bank Bldg., Boulder, Colorado.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Indiana State Board of Dental Examiners will be held in the State House at Indianapolis, beginning Monday, June 9, at 9:00 a. m., and continuing to Saturday, June 14. All applicants for registration in this State will be examined at this time. No other meeting will be held until November. No temporary licenses are issued. The new law requiring annual registration will be in effect about May 15. The first registration will take place in December of this year. For application blanks and further information apply to the Secretary, F. R. Fenshaw, 507-8 Pythian Bldg., Indianapolis, Ind.

RECENT PATENTS RELATING TO DENTISTRY.

- 1030856—Guard-sleeve for dental spindles, James H. Abbott, Philadelphia, Pa.
 1031533—Dental appliance, Wm. F. Davidson, Richmond, Va.
 1031332—Artificial tooth, Leo E. Evslin, New York, N. Y.
 1031855—Mold for artificial teeth, Joseph Kohn, Philadelphia, Pa.
 1032071—Blowpipe, Andre G. Le Chatelier, Marseille, France.
 1032072—Blowpipe, Andre G. Le Chatelier, Marseille, France.
 1032241—Attachment for dental lathes, Walter F. Richards, Quincy, Ill.
 1031737—Dental apparatus for removing wax from the teeth, Philip H. Sands, Lochgelly, Scotland.
 1032882—Cabinet and sterilizer, David L. Cloud, Greensboro, Ga.
 1032833—Dental cervical margin clamp, James W. Ivory, Philadelphia, Pennsylvania.
 1032835—Ingot casting device, Frank L. Jamison, Pittsburg, Pa.
 1033022—Folding tooth brush, Frank E. Kress, Denver, Colo.
- Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Bldg., Washington, D. C.

SOUTHERN WISCONSIN DENTAL SOCIETY.

The nineteenth annual meeting will be held at Highland Hotel, Delavan Lake, June 13-14, 1913.

Delavan Lake being such a beautiful spot, and Highland Hotel such an ideal place for us to meet, it was decided last year that we combine business and pleasure, making this meeting somewhat of a social gathering for the dentists of this section as well as providing something extra good in the line of papers. Not the quantity but the quality. And not try to give a whole lot of clinics, but a few good table clinics, the most interesting we can select.

The meetings and clinics will be held in the afternoons, giving us all a chance to go fishing, boating, bathing and get acquainted with each other, mornings and evenings. Now the getting acquainted is a grand feature and

one of the main objects of this meeting. We can learn a great deal from the other fellow.

Bring your families and spend Friday and Saturday, and stay over Sunday if you can, it will make a nice little outing for you, let the families get acquainted.

Highland Hotel is a first-class hotel with two hundred and fifty (250) rooms at \$2.50 a day.

We wish every reputable dentist in southern Wisconsin would be there, so we can all get acquainted. We will remind you of the date and send you a program later.—Committee.

RESOLUTIONS PASSED BY THE ENGLEWOOD BRANCH OF THE CHICAGO DENTAL SOCIETY, ON THE DEATH OF DR. ALFRED A. BROMAN.

Submitting to the Will of Providence, whose laws direct and govern our destinies, our society has again been summoned to suffer the loss of a member. It is with deepest regret that we are called upon to mourn the untimely death of our esteemed brother practitioner, and while we deeply deplore this great sacrifice, we most humbly yield to the inevitable.

Dr. Alfred Alexander Broman was born in Chicago, April 19, 1872. He graduated from the Illinois College of Dental Surgery in 1903. He was president of his class during his senior year, member of the Delta Sigma Delta Fraternity, and a member of the John B. Sherman Masonic Lodge. He was also president of his college alumni during the year 1906. He joined the Englewood Dental Society and was always a faithful and loyal member. He served our society as its secretary during the year 1910, attending to its duties with honor to the society, and credit to himself. He met his untimely death on February 10, 1913. Therefore, be it

Resolved, That in his death our Society has lost one of its most estimable members, an ideal professional brother, a model citizen, and a man who so fearlessly and willingly performed every duty to society and to himself, that he won the friendship of us all.

Resolved, That the Englewood Branch of the Chicago Dental Society extend to the bereaved family an expression of our deep sympathy and assure them of our admiration for his personal qualities.

Resolved, That these resolutions be spread upon our records, a copy sent to his family and all leading journals for publication.

H. E. PHILLIPS,
G. G. KNAPP,
J. H. HOSPERS,
Committee.

EXTRACT FROM THE NAVY APPROPRIATION BILL.

Provided, That a Navy Dental Reserve Corps is hereby authorized to be organized and operated under the provision of the Act approved August twenty-second, nineteen-hundred and twelve, providing for the organization and operation of a Navy Medical Reserve Corps, and differing therefrom in no respect other than that the qualification and requirements of the appointees shall be dental surgeons and graduates of reputable schools of medicine or dentistry instead of "graduates of reputable schools of medicine," and so many of said appointees may be ordered to temporary active service as the Secretary of the Navy may deem necessary to the health and efficiency of the Navy and Marine Corps, providing the whole number of both regular corps and reserve corps dental surgeons in active service shall not exceed in time of peace one to each one thousand five hundred of the said personnel, and no dental surgeon shall render service other than temporary service until his appointment shall have been confirmed by the Senate; *Provided, further*, That Dental Corps officers of permanent tenure shall be appointed from the Dental Reserve Corps membership in accordance with the

said provisions in the said Act, and all such appointees shall be citizens of the United States between twenty-two and thirty years of age, of good moral character, of unquestionable professional repute, and before appointment shall pass satisfactory professional and physical examinations, and when appointed shall take rank and precedence in the same manner in all respects as in the case of appointees to the Medical Corps of the Navy and shall receive corresponding pay and allowances and, when they reach the age of sixty-four years, be entitled to retired pay.

This is a copy of the original Bill, secured this date (March 20, 1913).

A true copy.

S. D. BOAK,

1st Lt. Dental Surgeon, West Point Military Academy.

STATE OF ILLINOIS BOARD OF ADMINISTRATION.

GENERAL ORDERS NO. 71.

Springfield, March 27, 1913.

General Orders No. 40 dated May 15, 1911, are hereby amended by striking out all of the paragraph relating to Dentists on page 7 of the printed copy of the orders and inserting in lieu thereof as follows:

DENTISTS.

Where their whole time is given to the service of the State, the Dentist shall receive from fifteen hundred dollars (\$1,500.00) to eighteen hundred dollars (\$1,800.00) per annum, with an increase from minimum to maximum at the rate of sixty dollars (\$60.00) at the end of each year of continuous service. Where a portion of their time is given to the service, compensation shall be a proportional part of the above rate.

In order to secure uniformity in dental work done by Dentists at the institutions under the control of this Board, and charges made for same, the following rules and regulations are hereby published for the guidance of all concerned:

The work to be that usual in the practice of dentistry, consisting of extracting, cleaning and all necessary treatments, amalgam and various cement fillings of the teeth, and repair of plates. All of this work to be given free to all cases, the same being service on an equal footing with that of the medical service.

Porcelain crowns (anterior) will be given free to patients or inmates on the recommendation of the managing officer.

In the discretion of the managing officer, plate work, etc., may be done, free of cost, to patients or inmates who are performing service in the institution. A record of this service to be made and filed with the case record or official record of the patient or inmate.

Gold work and plate work, in all cases, will be charged for extra at the following prices:

Gold fillings	\$1.00
Gold crowns (incisors and bicuspid).....	2.25
Gold crowns for molars	2.50

Bridge work at corresponding prices

(Bridge work to be recommended only in exceptional cases.)

Plate work, per plate.....	3.50
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(Excepting where gold clasp is used, when the extra cost for the clasp will be charged at the rates to be \$0.75 to \$1.00.)

In special work recommended by friends of the patient or inmate, the prices to be agreed upon as near the above prices as practicable. The managing officer will notify relatives, conservators or friends two weeks in advance of the proposed special work needed for the patient or inmate. If no reply is made to such recommendation the work will be done by the dentist in the same manner and with the same material as that given in the ordinary routine of service.

Relatives, conservators or friends of the patient or inmate are free to have dental service performed outside of the institution, but such work must be done at their own expense, and the charges for the same are to be regulated by the dentist doing the work.

The income received from all charges for dental work shall be paid to the managing officer who will receipt for same, and by him transmitted monthly as Miscellaneous Receipts to the State Treasurer.

No work will be done by the dentist for employes excepting in emergencies, for which there will be no charge.

Dentists and internes employed by the month and giving full time between eight o'clock a. m. and five o'clock p. m. on each week day will not be allowed to practice dentistry, excepting for patients or inmates of the institution as herein provided.

No dentist will be allowed to receive fees or honorariums unless same are submitted to the State Treasurer.

Records of the work performed by the dentist should be kept, properly classified, and a copy of the same transmitted monthly, addressed to the Alienist, Board of Administration.

Classification of work done to be as follows:

Name of patient and dates of service,

Number of patients examined,

Number of teeth extracted,

Number of teeth cleaned,

Number of teeth treated,

Number of roots filled.

Number of amalgam fillings,

Number of cement fillings,

Number of gold fillings,

Number of crowns, porcelain,

Number of crowns, gold,

Number of plates,

Summary of charges made for service.

Summary of free service,

Summary of expenses incurred, special,

Summary of expenses incurred, quarterly supplies.

General Orders No. 1, dated January 1, 1910, are hereby amended by striking out all of the paragraph on page 16 entitled, "Dentist and Dental Interne," and inserting in lieu thereof the following paragraph:

Under the direction of the managing officer or the assistant superintendent, the dentist shall have entire charge of the dental work for patients and inmates of the institution. It shall be his duty to make an examination as to the dental needs of each patient or inmate received, within five days after admission, and to make report of such examination in the form provided for the permanent record in the case history or official record. It shall be his duty, with the assistance of his interne, if one is provided, to faithfully carry out the dental procedures necessary for the comfort of the patients with special reference to conserving teeth that may be benefited by treatment and subsequent repairing. The hours of duty for the dentist and interne shall be from eight o'clock a. m. to five o'clock p. m. week days, and they shall be subject to call at any time by the managing officer or the assistant superintendent.

This order will become effective on April 1, 1913, subject to approval of the State Civil Service Commission.

BOARD OF ADMINISTRATION,
By B. R. BURROUGHS, Secretary.

Statement of the ownership, management, circulation, etc., of **THE DENTAL REVIEW**, published monthly, at Chicago, Ill., required by the Act of August 24, 1912.

NOTE—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office.

Editor—Dr. C. N. Johnson, Marshall Field Building, Chicago, Ill.

Managing Editor—Dr. C. N. Johnson, Marshall Field Building,
Chicago, Ill.

Business Manager—W. A. Wilde, 810 Masonic Temple, Chicago,
Ill.

Publisher—H. D. Justi & Son, 810 Masonic Temple, Chicago.

Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent or more of total amount of stock.)

H. D. Justi—1301 Arch St., Philadelphia, Pa.

H. M. Justi—1301 Arch St., Philadelphia, Pa.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities:

None.

Average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date of this statement. (This information is required from daily newspapers only).....

W. A. WILDE, Business Manager.

Sworn to and subscribed before me this 20th day of March, 1913.

(SEAL)

FRANCIS W. BOYDEN, Notary Public.

(My commission expires January 14, 1915.)

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, JUNE, 1913.

No. 6

PRESIDENT'S ADDRESS.*

BY J. F. F. WALTZ, D. D. S., DECATUR, ILLINOIS.

Members of the Illinois State Dental Society:

I find a keen pleasure and acknowledge a rare privilege in extending, as your presiding officer, a hearty welcome to those attending the forty-ninth annual meeting of the Illinois State Dental Society. Each meeting of the society has been distinctly notable for some or many points of excellence but none has given at its opening session greater promise than that we are now beginning. We have been particularly fortunate in having able men in charge of the committees directly responsible for the planning of this session and they, aided by the rich experience of those who have served before them, have prepared features of which they are justly proud.

The program committee has deviated from a more or less well established precedent of recruiting those on the program wholly from our membership and for carefully considered reasons has been gratified in being able to bring before us Dr. D. D. Smith a name synonymous with a trend in modern day practice we feel presages a long stride toward the goal most worth while—preventive dentistry. Other phases of practice have been happily provided for with a most noteworthy list of essayists and clinicians. We have listened to a cordial address of welcome from Peoria where the society with this session will have met on six occasions. The local committee has apparently outdone all previous efforts and headed by Dr. C. M. Smith is offering as a result of his ability and energy a very complete set of arrangements which should bring to Peoria the satisfaction of exceeding the previous record attendance made at the time of the last meeting in this city.

It is purposed to confine my remarks to observations upon pres-

*Read before the Illinois State Dental Society, May, 1913.

ent conditions in our society and several topics of current interest in the dental world.

The membership of the society has steadily increased since the reorganization in 1904 when the grand total was 450 until the grand totals for the past three years 1910, 1911 and 1912 have been 1671, 1610 and 1671 respectively. While these figures are gratifying there is indication of a stationary position which might denote a retrograde tendency were it not a fact there has never been a time when conditions generally throughout the component societies were more satisfying or apparently upon a more solid basis. For a time there was a tendency, probably due to the novelty following reorganization, toward too frequent meetings with the result that the worth of the programs suffered somewhat. This has changed in the case of most of the smaller societies until only one or two meetings are attempted with an evident improvement in the value of the programs and increased attendance. Manifestly it is better policy for the smaller societies to hold one meeting a year upon which is concentrated the attention the usual set of officers is willing to put forth than to divide this effort between several meetings. I have personally attended meetings among the outstate societies at Tuscola, Bloomington, Peoria and Springfield during the past year which were enthusiastically well attended and with programs all of such excellence it seems little could be added as improvement in the hope that with better meetings the membership could be augmented.

In some districts practically every eligible dentist holds a membership and in the case of most districts there are, of course, some men to whom dental society membership in common with support of any organized effort can never be made to appeal. Such men appear to be in a measure detached from society and are not to be considered as possible members of any group and least likely a dental society. The largest proportion of eligible men not members however ought to be attracted strongly enough to lend their support can we but hit upon the right means. The nature of the programs at successful meetings if analyzed seems to take that form wherein live and practical subjects are presented in papers and these discussed. For instance the component society programs have during the past year centered with some uniformity about the subjects oral hygiene and fees. What dental practitioner can not be inter-

ested in these subjects at this time? Good men have taken part in these presentations and discussions and with undoubted benefit to all in attendance. Thus it seems unlikely that the programs can be made so good or attractive that non-members will take membership.

The post graduate study course as inaugurated several years ago was of aid in a number of component societies but was made little use of by others. When not used the difficulty seems to have been due to the lack of some one person or group of persons willing to apply the course to society programs in the manner contemplated by those planning this feature; by whom it was intended the lists of questions should serve as guides in the reading and study of the subject matter. The application made was often that simply of submitting a question and then reading the references verbatim. This could scarcely be expected to appeal to the majority of men whether they be dentists or what not for the references were to authoritative writers and left little room for discussion by the usual group of practitioners.

Dentists, it has so often been pointed out, do not read as they should and it is said two-thirds of all dental practitioners are not within reach of our professional literature. Can it be possible? Observation would compel us to admit some such condition is a grim fact. With the dental journals coming to one's hand each month at an outlay of one or two dollars annually and containing the continual unfolding of a record of experience and achievement this seems almost incredible. To read dental literature is every dentist's duty and a plea is made that any present who are lax in this respect follow up a resolve to acquire a reading habit with the slight effort needed to do so. The dental periodicals come to hand in our offices where reading is certainly not the chief matter considered. Consequently we glance over the monthly issues casually and treat them much as daily newspapers, to be skimmed through and cast aside. Yet nowadays the most influential and up to date man in any community can not be the one ignorant of the literature of his calling. A plan of reading found of the greatest personal benefit and a source of one of the keenest pleasures of life from day to day here suggests itself. It is obviously impossible to read the journals piecemeal as issued and thus they lie about read partially and hastily until the December numbers are received

when the entire volume is sent to the binders and bound at a slight expense. These bound volumes are then taken home and kept by strict orders on the reading table. Here night after night through the year one picks up one of the volumes of, say, the *Cosmos*, *REVIEW* or *Items* and reads connectedly what often one has no memory whatever of having seen as the journals were issued. The continued articles are found complete and many a profitable hour and much pleasure is due to this plan of journal reading. Be the time a few minutes or an entire evening there is ever at hand something instructive and worth while to read. Should one or two men only be influenced to apply this suggestion it will be felt much has certainly been contributed to the good this meeting shall have done. In proportion as a dental society is made up of men of reading habits will such a society find a post graduate study course of value.

The state society offers a great deal now to each member but may not even more be given in the effort to secure a still more representative organization? The feature of membership in the National Association as it develops into a true national body without any considerable addition in dues constitutes one most important increase in benefits to be offered and will be later discussed. The Massachusetts State Dental Society adopted in May, 1912, an amendment to its by-laws which suggests strongly a feature our society might also adopt with wisdom and at the same time add to a membership a value many men would appreciate. There would seem to be no reason why the plan as indicated in the following excerpts from the amendment referred to might not be given at least a trial on its merits by our society:

ARTICLE VI. "LEGAL DEFENSE OF UNJUST MAL-PRACTICE SUITS."

"Section 1. Active members of the society, in good standing, shall be entitled, in accordance with conditions specified in the following sections of this article, to receive, without personal expense therefor, advice and court service of an attorney or attorneys-at-law in the employ of the society for the purpose of conducting their defense in any court in this Commonwealth when they are unjustly accused of mal-practice.

"Section 2. Active members of the society desiring to avail themselves of the privileges provided in this article shall make application therefor, in writing, to the society's law committee and shall show to his satisfaction that they are members in good stand-

ing in the society with all obligations to the society fully discharged. They shall also furnish the law committee, at their request, a complete and accurate statement of their connection with and treatment of persons upon which complaints against them are based, giving dates of treatment, names and addresses of persons cognizant of facts and circumstances necessary to a clear and definite understanding of all matters in question, and shall furnish such other relevant information, if possible, as may be required of them by the law committee or the attorney of the society."

The secretary's office during the past year has been ably conducted. A personal enjoyment of relief from the duties it imposed while striving to serve in that capacity is only equaled in volume by commiseration for the present incumbent. Many suggestions as to how a busy practitioner might be relieved of a volume of work sufficient in itself to fully occupy one man's time entirely have been made but none without serious objection. No one not having served as secretary himself can appreciate what sacrifice the work entails. The honorarium voted is all the society is able to grant and with the necessary expenses of the office constitutes a considerable sum. It seems impossible to divorce the work from a member and a practitioner and while there should be compensation commensurate with the duties of the office it seems quite impossible that this can now be done. With this situation, then, it appears necessary for the society for the present to be under obligation to "the man behind the gun."

The Public Service Commission has continued throughout the past year the plan inaugurated after the 1911 meeting of holding public meetings at which able speakers have addressed audiences in nearly every city of considerable size in the state. In the Commission's report at the last meeting eleven cities were cited wherein 8,000 people had attended such meetings. Under Dr. Logan's leadership this immense work has been added to until the progress made up to this time in performing our duty toward the public is satisfactory. Dr. Gallie's address two years ago awakened the society to the fact we were woefully behind in comparison with some other communities in this matter, that we had done so little but talk and discuss the subject the most that could be said was "we have been groping and feeling our way." Contrast the present condition with that two years ago and thanks to the Public Service Commission it

is evident we have considerable cause to feel satisfied with the results achieved. The publicity gained for the subject of the influence that diseased oral conditions have upon the individual's and in turn the community's welfare has been immense and beyond estimation through the direct effect of the speakers upon their audiences and the stimulation of the profession toward greater effort at intelligent instruction of the patient in private offices and indirectly through the publicity gained in liberal space given these meetings in newspapers reports thereof. The Public Press articles when published and the booklets distributed have added something more until it is evident we are getting on.

Is it not pardonable to attribute much of this big achievement to our organization and may we not feel proud of what we have demonstrated is made possible by society effort? Without a big representative body Dr. Gallie would never have been stimulated to get together such a report nor would any individual alone, without a compact state organization, have found it possible to pursue as successfully the course followed by the Public Service Commission. Reference is made over the country to "the Illinois plan" and with reason when we ourselves witness the working of that plan. We may congratulate ourselves upon the enviable position we have attained as a society whereby we are constantly demonstrating the value and possibilities of professional harmony and co-operation. Dr. Jarvie well expressed the value of associated effort in saying "Let a dozen men of ability and high attainments stand off at arms' length and argue with each other and find all sorts of differences and they would never get together. Let them get in close touch with one another, let them have inter-change of ideas and views and it is astonishing how the respect of one for the other will increase and they will get together and combine on almost anything for the good of all." In full justice the Chicago society must be given the larger part of credit for whatever the state society has come to be. Occasionally some down-state members voice a little dissatisfaction over the activity of the Chicago members, but let it be emphasized, we down-state men would never have succeeded in bringing the Illinois society to the position it occupies by common consent of the profession everywhere as considerably the largest and most influential dental society in the world today without the initiative and support of the Chicago society.

At the last meeting a special committee was created to formulate and report a detailed plan for the conversion of the 1914 meeting into a fitting golden jubilee celebration. This committee has under way plans which give promise of a unique type of dental meeting to be held in Chicago and one fitting the occasion. It is not easy to imagine a better meeting than the best of those held in Chicago, but one year from this date the Illinois society is committed to the task of making just such a meeting an accomplished fact!

Almost since we began to recall events distinctly we seem to remember hearing discussed reorganization of the National Dental Association and this subject had become in many minds a kind of dreamy topic in a group with those argued before high and district school debating and literary societies. "Resolved that the National Association shall be reorganized, etc.," had for some years been a subject as familiar to dentists as "Resolved that the signs of the times indicate the impending downfall of the Republic" has been familiar to the community literary society. But at length in and a plan of reorganization was adopted by the National Association at the Washington meeting which is destined within a few years to bring about the realization of a National body truly representative of the dental profession. Various plans to this end had been submitted to our society until at a Council meeting at our last session the usual National Association communication came up for consideration with the result a committee was appointed to point out to the National Association wherein changes in the proposed reorganization plan should be made before that plan could be accepted by our society or others reorganized on the so-called Illinois plan. This committee first called together representatives of the Ohio, Michigan, Minnesota, Iowa, Kansas, Missouri and Oklahoma societies, who through a tedious day's discussion arrived at a list of suggestions to the National Association which, if adopted, would, in the opinion of these reorganized societies, guarantee a National Association to which they would pledge support. Practically all the proposed changes were adopted and the National reorganization movement has now come to that stage where the various state societies must get behind the plan and push it on toward completion.

The Council of our society believing the example set by Illinois would do much to hasten matters and realizing the advantages inherent in a great National Association held a special meeting to con-

sider plans whereby the entire or a large part of our membership might be enrolled as members of the National body. It was decided at this meeting to bring the matter before each component society with the proposition that for at least the first year the state society would agree to pay fifty cents of the one dollar dues in the National Association if the component society would provide another fifty cents. The Council will submit this plan to the society for its approval at this session and it will doubtless be voted upon favorably, since every component society has already overwhelmingly voted to become members of the National Association upon these terms. By this means we will be enabled to carry to the National body the entire membership of our society without increasing the dues for the present. Most component societies have found their incomes sufficient to take care of the National dues in this manner without any increase in their own dues. The National Association plans to keep its dues at one dollar annually until their membership will have grown sufficiently to make possible the successful publication of a Journal. As soon as this is done, probably by 1915, the dues are to be two dollars and in return a member will receive the Journal, an engraved certificate of membership and the printed transactions of the annual meeting. While the dues are one dollar it is purposed to issue a monthly bulletin in lieu of the Journal. Thus an entirely feasible plan has apparently been agreed upon and the reorganization of dental societies begun in the state organizations has been finally completed so that the profession may now become efficiently organized into a compact national body. One joins the local society and pays dues to the local secretary which at once makes him a member of the local society, the state society and the national society.

The returns secured by each individual for the small outlay will be felt sufficient in securing the Journal, which will become the pre-eminent American dental publication, comparable to the American Medical Society Journal. Of course the Journal will have such a wealth of material from which to select its subject matter nothing except that of the greatest merit need be published. It is well known many physicians are members of the American Medical society mostly because membership brings them the American Medical Journal, which they agree more than compensates them for the outlay in dues.* It is not possible for but a comparatively small

number of practitioners in the country to attend annually the meetings of a national body owing to the long distances to be traveled, but occasionally when the meeting place is near at hand attendance will be too attractive not to be enjoyed. However, the Journal will be worth the dues in the National if one never expects to attend a meeting.

With a great national organization many long cherished dreams will speedily become possible realities. The unification of dental laws, making those of each state more nearly conform to those of all others, at once suggests itself with that appealing feature—interchange of licenses to practice. Whether full reciprocity will ever come to be a fact can not yet be prophesied, but there will certainly come a freedom from many restrictions now imposed. It is not too much to hope that a reputable practitioner may find it entirely possible to practice in any state in the union after receiving a license in his native state by complying to easily met requirements. Legislation sought from Congress can more certainly be secured when endorsed by a true national body than is possible now, for never in history has it been more necessary that reforms or movements to be successful must have the endorsement of an organized support. With public opinion forming rapidly toward active government supervision and direction of health matters a National Board of Health takes more and more definite form and with a national dental activity similar to that carried on by our Public Service Commission and the effect on public opinion of well conducted dental infirmaries, the inclusion of provision for oral health direction by the national government follows as a matter of course.

Education of the public on all matters pertaining to our calling is possible through a nationally conducted campaign in which leadership may be given those of all the profession in our country best qualified for the particular work. With able leadership a great task becomes easy of accomplishment through a large body of workers procurable from all over the country and to each worker the part given is simple and easily fitted to the day's routine work without any noticeable sacrifice.

The National Association has already launched a movement fondly hoped for by many good men—the scientific fund and oral research campaign. Dr. Lawrence of Enid, Oklahoma, while still a resident of Illinois read a paper before our society some sessions

ago pleading that our society provide for a plan of this nature. Quoting from the outline of the plan in the recent journals: "A host of our profession have been longing for a way to do this seemingly imperative work for dentistry and humanity, but which they had not the time, facilities or money to do themselves. Now, uniting each individual's effort, we can with a few cents each per year provide for the maintenance of an expert investigator, with a corps of competent assistants all working in excellently equipped laboratories, and any basic problem can there be attacked for a few cents from each of us." Briefly, the plan seeks to support capable men in investigation of basic problems relating to dentistry in laboratories, the use of which has been proffered gratis with an environment of experienced experts in allied lines of scientific work. The support needed is money in donations to the equivalent of one dollar per year for five years from each member of the profession in the United States. The committee in charge has everything ready except the money, for exhaustive study of such problems as dental caries, with cause, prevention and means to bring about immunity therefrom, pyorrhoëa, systemic and distant infections originating in the mouth, erosion, its etiology and prevention, enamel atrophy, its cause and prevention, metallurgical problems, such as substitutes for platinum and platinum iridium alloys, dental alloys, amalgams, etc., etc. Dr. Mayo at the recent Chicago meeting, in his excellent presentation, asserted that the next great advance in preventive medicine must be made by those in charge of the oral cavity and closed his paper with, "the question is, will they do it?" Realizing a tremendous work must precede such a contribution, it seems we can only reply we will do it. When this task may be completed no one can predict, but it appears enough is known from which a start can be made toward at least a partial glorious completion. Let us as a society endorse this research campaign and individually, or otherwise, donate the mite—a few cigars less, say—to the fund required.

At the last session a proposition from the National Association was considered which sought to establish a fund for the worthy aged and indigent of our profession. In the discussion which followed it was evident there were many members favorable to a feasible plan toward such an end, and many others were opposed, some to any such plan, and others because it was felt no feasible plan suggested itself. Personally, I see no reason why in due time the

dental profession, through the National Association, should not provide a home for its worthy needy under definite circumstances, if we as citizens have provided needy old folks' and soldiers' homes. A general tendency exists toward a provision for certain conditions of old age and infirmity that shall remove something of the inhumanity of these conditions without such provision. It is manifest in our industrial life and the idea has its highest development in the old age pension provisions in Germany. A feasible plan does not readily suggest itself, but a very interesting discussion of the subject editorially, by Dr. Ottolengui in the 1912 *Items*, closes with an idea given here because it possesses the merit of offering every dentist, if the idea is carried out, opportunity to make a slight contribution toward the establishment of a home for indigent dentists: "There is a plan which might be put into effect immediately. The Red Cross society receives tremendous sums of money annually through the sale of Christmas seals. Thousands of dollars have been contributed by dentists to this very fund. Why not adopt a similar plan for the benefit of our own brethren? The National Association committee might distribute Christmas seals which could be placed on sale in every dental depot in the country. Packages of the seals could be sent about November first to every dental society in the United States. Thus, through the agency of the dental depots and the dental societies, we would reach all in the profession, whether society members or not. If it were understood the proceeds were to be devoted to the worthy old men and the infirm of our profession, the sales ought to be large. Why not give this plan a trial?"

The subject of dental inspection of school children has been before us for some time. The desirability of such inspection in conjunction with a medical inspection is everywhere conceded and urged by physicians, dentists, educators and laymen, who have given it the slightest consideration. Results shown where school inspection has been inaugurated have been so overwhelmingly in its favor the public opinion formed thereby and through various agencies is already so tremendous it would seem in order that a start be made. The time is opportune for the drafting of a bill to be presented to the legislature, which will provide for a state wide adoption of the plan. This should be done of course in conjunction with the medical profession. There will be no particular difficulty in

framing a bill for this purpose, and why should not it be begun now? At a recent public meeting, under medical auspices, in Decatur, the subject of public health was presented by Dr. W. A. Evans. The meeting was little advertised, but the size and personnel of the audience and the attention given the speaker, was amazing, and served to impress one with the great public interest in health matters. School inspection was discussed, and the comments made thereon, indicated in a manner typical of nearly all if not every community over the state, the popular approval of any legislation toward establishment of this much needed public work. Shall the society not take some initiative in this work during the present session?

The establishment of free dental infirmaries over the state is a subject of much importance, in view of its great value in creating the public opinion needed in favor of a compulsory school inspection. Inquiries made of all cities of fifteen to twenty thousand or more population over the state, as to whether such infirmaries were in operation, or were ever proposed, with solicitation of suggestions as to successful means of conduct if established, were replied to in sixteen instances, as follows:

Rockford. Nothing ever done. Some members opposed.

Danville. Some effort made but nothing accomplished.

Elgin. Nothing done. Never considered.

Jacksonville. Nothing done. Never considered.

Quincy. Nothing done.

Freeport. Discussed. Nothing done.

Moline. Nothing done. No action ever taken.

Bloomington. Discussed, but nothing final accomplished.

Belleville. Nothing done. Never considered.

Kankakee. Some effort made, but nothing accomplished.

Joliet. No effort made after failure of a proposed school inspection.

Decatur. Urgent cases sent by school nurse to one dentist.

Peoria. Two infirmaries maintained satisfactorily.

Springfield. One infirmary maintained satisfactorily.

Galesburg. Cases sent by school nurse to members' offices in alphabetical order.

Chicago. Eleven infirmaries furnished largely through Mr. Rosenwald and salaries paid operators to amount of \$10,000 annually by the philanthropy of Mr. Rosenwald.

From the foregoing, it is apparent nothing has been constructively accomplished except in Chicago, Peoria, Springfield and Galesburg. In Decatur, the matter was presented at a meeting of the Macon-Moultrie society and the point was there brought out that dentists are little inclined toward charity work of this kind however much they may be charitably disposed in other respects. This is true to a large extent everywhere. It was urged there should be legislative provision made for compensation of men engaged in such work and this undoubtedly is true, but is there strong enough public opinion to warrant effort at such legislation? A bill for school inspection should certainly incorporate this feature, but it seems too much to hope that it would be enacted. In lieu of public support of this work several plans have been followed: One plan embodies the voluntary service of the dentists in such clinical work, the patients being taken care of in a separately equipped room often in a school house or church, and in other instances the patients are sent to the offices of the volunteering dentists. This plan has usually been found unsatisfactory after a short time through failure of some men to report upon days allotted to them and again there are objections to having clinic patients taken care of in private offices, owing to the need of giving occasional preference to such cases over regular and valued patients. Another plan operating in Atlanta, Ga., provides for clinic patients in a special place with the attending dentist paid from a fund collected through voluntary contributions from resident dentists. Any plan seems destined after some time to serious impairment if not entire abandonment, if voluntary service from attending dentists without compensation is depended upon, particularly in communities of some size. Until legislation will provide compensation it would appear the Atlanta scheme possesses the most likely solution, the fund being raised through contributions from dentists and charitably inclined citizens with a few of whom nearly every community happily is blessed. In smaller communities, the plan in operation in Galesburg seems applicable, the clinic patients being sent by the school nurse or in case of a school inspection by that means to a list of dentists good enough to provide this service in their offices. In such cases there are comparatively few clinic patients and each dentist would be called upon for service to only occasional patients. The progress made in Chicago is in line with what might be expected of Chicago men

when any action is determined upon. New York City recently opened six clinics through provisions made in the 1913 budget with the hearty endorsement of Mayor Gaynor. It is our positive conviction this work should be taken up immediately in every community, not only because of its urgent need from a humanitarian standpoint, but also and more largely because the successful operation of a general benevolent work of this kind will inevitably lead to consequent legislation and provision for permanent maintenance.

All charity work seems wrong when viewed in a certain light for the reason that there should not exist in society conditions which make organized charity necessary while there are many individuals literally rolling in wealth and often in a kind of wealth acquired from society without any service to society commensurate with the amount of wealth accumulated. It is a matter of history and of observation to all of us that the greatest benefactors of society have in too many instances received no returns for their great services—such men often dying in abject poverty because of the very benefaction which they have developed. Something is fundamentally wrong. A correction of these conditions will undoubtedly come to pass in time, at least in large measure, but probably not within the lives of those here present. Consequently we must do the best we can with the means at hand, and the dental infirmary should be charitably maintained by individual or state aid to the very end that it may do its share through education and development in pointing the way to correction of the conditions which make modern day charity a necessity.

The legislative committee in their last annual report cited briefly the provision made for dental service in Illinois state charitable institutions under control of the Board of Administration. Believing a more detailed statement regarding the extent and some of the conditions surrounding this service would be appreciated by the society the following tabulation was procured through the courtesy of Mr. Whipp, fiscal supervisor of the Board. Dr. Howard Raper in Oral Hygiene presented a paper well calculated to make any one ponder society's duty toward the unfortunates who become inmates of state charitable institutions. Quoting from the paper, which should be widely read, "To protect itself society must deny these people two of the greatest privileges of life, freedom, and often, but not always, the right to reproduction. That is enough. They are

entitled to every other consideration. We only have the right to protect ourselves."

INSTITUTION.	DENTISTS.			
	No. of inmates Mar. 1, '13.	NAME.	SALARY	TIME.
INSANE.				
Elgin State Hospital	1,527	F. R. Merz	\$100.00	Full time and maintenance.
Kankakee State Hospital	3,059	G. A. Mills	100.00	Full time and maintenance.
Jacksonville's Hospital	1,664	Dr. Tormey	50.00	One-half day per week.
Anna State Hospital	1,593	D. L. Woodworth	100.00	Full time; full maintenance.
Watertown S. Hospital	1,492	.....	.....	Piece work. Go to Moline.
Peoria State Hospital	2,134	D. H. Baldwin	50.00	One-half day per week. No maintenance.
Chester State Hospital	216	.....	.....	Work completed in three months. Dentist transferred to Anna. Four half days per week. No maintenance.
Chicago State Hospital	2,391	David Sullivan	75.00	
FEEBLE-MINDED.				
Lincoln State School & Colony	1,446	C. N. Neal	15.00 per visit	One day each week. No maintenance.
Illinois School for the Deaf, Jacksonville	394	.....	.....	Go to local dentist.
Illinois School for the Blind, Jacksonville	204	.....	.....	Go to local dentist.
Industrial Home for the Blind, Chicago	104	.....	.....	No work.
Soldiers' & Sailors' Home, Quincy	1,438	.....	.....	No work.
Soldiers' Widows' Home of Illinois, Wilmington	75	.....	.....	No work.
Soldiers' Orphans' Home Normal	302	H. C. McCormick	10.00 per visit	Two half days per week. No maintenance.
Illinois Charitable Eye & Ear Infirmary, Chicago	185	.....	.....	No work.
State Training School for Girls, Geneva	409	A. M. Wolson	54.50	Three days per week, one fourth maintenance.
St. Charles School for Boys, St. Charles	480	A. M. Wolson	54.50	Three days per week. One fourth maintenance.
<hr/>				
Total.....19,113				

"Where the dentist's whole time is given to the service of the State, he shall receive from fifteen hundred dollars to eighteen hundred dollars per annum, with an increase from minimum to maximum at the rate of sixty dollars at the end of each year of continuous service."

"In the discretion of the managing officer plate work, etc., may be done free of cost to patients or inmates who are performing

service in the institution. Gold work and plate work in all cases will be charged for extra at the following rates:

Gold fillings	\$1.00
Gold crowns, incisors and bicuspid.....	2.25
Gold crowns for molars.....	2.50
Bridge work at corresponding rates, this to be recommended only in exceptional cases.	
Plate work, per plate.....	3.50

"The income received from all charges for dental work shall be paid the managing officer, who will receipt for same and transmit the amounts monthly to the State Treasurer. No dentist will be allowed to receive fees or honorariums unless same are submitted to the State Treasurer."

"Under the direction of the managing officer the dentist shall have entire charge of the dental work for patients and inmates of the institution. It shall be his duty to make an examination as to the dental needs of each inmate received within five days after admission and to make report of such examination on form provided for the permanent record in the case history or official record. It shall be his duty with assistance of internes when provided to faithfully carry out the dental procedures needed for the comfort of the patient with special reference to conserving teeth that may be benefited by treatment and subsequent repairing. The hours of duty for the dentist shall be from eight A. M. to five P. M., and they shall be subject to call at any time by the managing officer."

From the foregoing it is apparent dental service is upon a satisfactory basis in these institutions, and however much Illinois may be a laggard in advanced legislation when compared with some other states, notably Massachusetts, there is cause for pride in what is being done in this respect.

Finally the subject of asepsis in relation to dental instruments suggests itself. Dr. John S. Marshall in the American Medical Journal severely arraigns the dental profession for its lax methods in this regard. As illustrating his contentions he cites the general absence or small numbers of sterilizers in dental college infirmaries, asserting the students as a general practice wipe their instruments solely on a towel, often a soiled one, in changing from one patient to another, rather than await their turn at a sterilizer even when one is provided. Pulp canal instruments are used repeatedly with-

out being sterilized and demonstrators' hands are rarely ever washed between examinations of different patients' mouths. A prominent teacher is cited as passing through the operating room with a mouth mirror in a vest pocket examining the students' work and passing from chair to chair without once washing his hands or cleansing his mouth mirror. It is a fact many practitioners' offices are not provided with sterilizers, or when so provided they are carelessly used. However careful one may be there is always grave danger of transmitting infectious diseases and negligence in this respect at this day is positively criminal. Inexpensive sterilizers are on the market and no practitioner is excusable for indifference in this matter. A very satisfactory type of sterilizer is one designed for use before the operating chair where instruments are readily boiled in a sodium bicarbonate and water solution before the eyes of the patient, who may thus see what is done rather than be required to accept these precautions having been taken as a matter of faith. Nowhere is the adage "seein' is believin'" more applicable. As stated by Dr. Marshall, there is no longer the slightest excuse for such laxity. The public is becoming educated to the dangers from infection at the hands of a careless or ignorant dentist, as they should be. Physicians are particularly alert to this danger, and the sooner our profession awakens to the fact the better it will be for our reputation and the health of our patients.

SUGGESTIONS ON ORAL PROPHYLAXIS.*

BY F. H. SKINNER, D. D. S., CHICAGO, ILL.

In presenting this subject, I do not expect to have the pleasure of bringing any new thoughts to the men who are enthusiastic along this line of work, but would like to make suggestions which I hope will provoke a discussion on the principles, technique, practice, and benefits to be derived from this valuable treatment, which will interest those who are not already in the army of oral prophylaxis workers.

To make a success of this work a dentist must know the benefits to be derived from periodical prophylactic treatments, and then he must be able to convey that knowledge to his patients and also

*Read before the Peoria Dental Society.

to demonstrate that with proper home care, beneficial results can be obtained.

Some lucky individuals are practically immune to dental caries all their lives. The treatment I am going to outline is not necessary in such cases. But we never know when a period of caries is going to set in, for it attacks the teeth of those who are apparently in good health as well as of those who are not, and vice versa, regardless of whether enamel is so-called hard or soft, although Pickerill, in his recent book on "Prevention of Dental Caries and Oral Sepsis," claims that the tooth surfaces which are most susceptible to decay are the softer and can be recognized by "imbrication lines" which are due to the enamel organ not performing its full function at the time of development of the tooth. He also thinks that dental caries is largely controllable by thorough mastication of hard foods and other salivary stimulants; that one should terminate his meals with acids, such as fruits, which increase the quantity as well as the alkalinity of the saliva, rather than with glutinous carbohydrates, which are contained in so much of our pastry and which decrease not only the amount, but also the alkalinity of the saliva. The experiments he reports seem very convincing.

But this paper is not written for the benefit of those who are immune. We must take conditions as they come to us in our every day practice. I believe it is not disputed that dental caries, whether due to lack of oral hygiene or to some systemic condition which takes away the protecting property of the oral fluids, is the result of bacterial conversion of carbohydrates into acids. Under conditions which do not interfere with or inhibit their growth, glutinous substances, commonly known as microbic plaques, are formed. Under this protection bacteria can work in actual contact with the tooth surfaces. The constituents of thick, viscous saliva, which always contains an excess of mucin, are probably the most favorable media for the formation of plaques. The mouths in which this condition is found always require special care.

Once plaques are formed, they cannot be dislodged with a tooth brush even when used with any of the mouth washes, dental pastes or powders so far introduced. In other words, acid-forming bacteria construct a covering under which to work, where tooth powders, pastes and mouth washes used with a tooth brush cannot reach them.

Liquified carbohydrates (cooked starchy substances of which our modern diet largely consists) and sugars have the power to osmose through these plaques, where from bacterial action they are slowly converted into acid, usually lactic. This lactic acid unites with the calcium phosphate of the enamel, forming calcium lactate, which passes out and a fresh supply of liquified starches passes in. This, in turn, is converted into acid, is neutralized by some of the calcium salts of the enamel and passes out again, each time carrying with it some of the substances of the enamel, until what was at first a smooth, hard surface becomes etched, and finally a cavity is formed. Once the enamel is disintegrated, the dentin offers little resistance to the attack of the products which cause decalcification.

These plaques usually gather just gingivally to the contact points, on the gingival third of the mesial and distal surfaces, in the deep fissures and in depressions of malformed teeth, and these locations need careful watching.

By some authors, sulpho-cyanate of potassium in the oral secretions is supposed to hold the formation of plaques in check, and it is found to be present in the saliva of a great many persons whose teeth are immune to caries.

The test for sulpho-cyanate is extremely simple. Take two centigrams of saliva to which two centigrams of distilled water slightly acidulated with dilute acetic acid has been added; mix, and add five drops of saturated solution of ferric chloride. If the saliva contains no sulpho-cyanate the color will be pale lemon. If there is any sulpho-cyanate the color will vary from a light to a dark reddish brown, according to the quantity present.

From results gained in laboratory tests, Dr. William J. Gies of New York claims that the presence of sulpho-cyanate in the saliva bears no relation to decay of teeth, but Dr. H. P. Pickerill of London and Dr. Frank Low of Buffalo claim to have had positive clinical results from the administration of sulpho-cyanate, and after all, clinical results are what we want.

One thing is certain, and that is that in the human race sulpho-cyanate is usually found in the saliva of those who are immune.

Calcium salts, held in solution in the saliva, undoubtedly play a very important part in the prevention of dental caries, for if a quantity, sufficient to neutralize any acids formed by fermentation, is mixed with debris as it gathers, the tooth surfaces will be un-

harmful, but a crust usually forms next to the gingivus. To this any amount of infectious matter adheres, and the gingival margin becomes inflamed.

Salivary calculus of the light yellow variety collects in large quantities nearest the outlets of the salivary glands, i. e., on the lingual and proximal surfaces of the lower incisors and buccal surfaces of the first and second molars. This variety seldom works under the gums, but if allowed to remain, it forces, by gradual pressure, the tissue, both soft and bony, toward the root ends.

The serumal calculus usually forms on the proximal surfaces of teeth just under the free margin of the gum, and extends mesially and distally until it meets on the buccal and lingual surfaces, especially the lingual, then forms rootwise. Any irritation or congestion may cause this form of deposit to gather on any portion of the pericementum and it sometimes causes a pericemental abscess, but these cases are comparatively rare.

Authorities differ in regard to the origin and mechanical process by which this form of calculus is deposited. Some think it comes directly from the blood stream and is the result of local irritation and poor return circulation; another says it is the residue from breaking down process, etc. Whatever the cause, it is the duty of every dentist to remove every particle of foreign substance from the teeth, whether on the enamel surfaces or under the free margin of the gums.

The least irritation will cause inflammation of the gingivus, and inflammation causes the little ductless glands or crypts (glands of Serres) which line the inner wall of the gingivus to open. (These glands are most beautifully described and illustrated in Dr. E. S. Talbot's "Interstitial Gingivitis.") Your essayist believes that when the gum tissue is in an inflamed condition, these glands form as much of a gate for systemic infection as the tonsils do, if not more so, for there are hundreds of these glands, which, in any mouth in which the necks of the teeth are not kept free from all irritation, open up and thus lead directly into the circulation. Infection taken in through these little openings enters the circulation and is carried up into the vessels of Von Ebner and the Haversian canals. Osteitis, or what Dr. Talbot calls interstitial gingivitis, follows, and thus is laid the foundation for a case of alveolar pyorrhea.

Roughened or etched enamel surfaces of the gingival third, bands which do not fit the necks of the teeth and which lacerate the tissues or allow soft accumulations to gather and ferment under them, or bands which fit, but which have been driven up until they encroach on the dental ligament, bridgework which cannot be kept clean and metal fillings not properly smoothed down at the gingival third cause inflammation. Also, the silicate or phosphate fillings which I have used are all rough enough to produce irritation to the gum tissues and pyorrhea is always found where a partial suction plate has been worn for any length of time.

Most dental caries starts during the growing years, while pyorrhea is more often a disease of the mature age. This, in all probability, is due to the fact that the calcium salts are utilized during the growing years to make bone, and when this process is completed the bone building materials have to be eliminated. The salivary glands assume their portion of this work, thereby surrounding the teeth with a better tooth preserving fluid, but as we settle down and take less vigorous exercise, less carbon dioxide is formed and excreted, so that the calcium salts are more readily precipitated. Therefore, to prevent decay, it is very essential that all surfaces of the teeth not covered with gum tissue be kept free from soft or glutinous accumulation. To prevent gingivitis, pyorrhea and systemic infection, it is necessary that the necks of the teeth be kept free from conditions which will irritate the gingival margins.

This leads us to the subject of

ORAL PROPHYLAXIS.

For ideal prophylaxis, we should commence with the eruption of the temporary teeth. Teach the parents or nurse to watch for and remove all foreign substance which gathers on the child's teeth. Get the little one to come in and see you. Do not try to do much work during the first visit, but entertain him a little. Give him a ride up and down in your chair; get him interested in the running water in the fountain; see if, with your help, he can jump over the back of the chair. In other words, make a friend of him. We cannot make much of a charge for such a visit, but before long you have gained a good friend and a patient, and most likely, sooner or later, the parents and some of their friends will become patients and the financial part is quickly made up. Also it is a pleasure to

watch the growing interest children will manifest in keeping their teeth clean.

PROTECTION OF FISSURES.

If fissures are deep they should be protected with cement, which should be renewed in from one to five years, as required, and as the permanent teeth erupt, the fissures of molars and bicuspid should have the same treatment. The technique of this procedure is to have an assistant help hold a cotton roll on each side of the teeth to be covered, then, drying the teeth with compressed air or chip blower, wipe off with alcohol and dry again; mix cement to about the consistency used in crown and bridgework, and cover occlusal surfaces; press cement to place with finger well vaselined, which will prevent cement from sticking to finger. Pressure should squeeze out everything except that which is held in the fissures. It will interfere in no way with the interlocking of cusps or with the articulation, but will prevent decay in fissures wherever it adheres. The copper cements probably have more adhesive property than the lighter colored ones, but are somewhat objectionable because they are dark. The deeper the fissures are, the more liable they are to decay, but if covered before decay has started, the cement will last longer in them because of their depth. This will prevent decay of fissures, which is three-fourths of the battle with juvenile patients.

USE OF A DISCLOSING SOLUTION.

Microbic plaques and small granules of calcific deposits are transparent, or so nearly the color of the teeth that they are frequently invisible to the eye. The sense of touch, after months of experience with a hand polisher or orange-wood stick, will only imperfectly indicate to us whether or not a surface is clean, so that the only way we have of absolutely proving whether all foreign substance is removed is by the use of a disclosing solution.

The following formula has proven the most satisfactory of any I have tried:

Iodin crystals	Grs. 50
Potassium iodid	Grs. 15
Zinc iodid	Grs. 15
Glycerin	Drs. 4
Aqua	Drs. 4

Mix. Put up in glass stoppered bottle.

Sig. Paint two or three teeth at a time. Rinse immediately with water. All places stained by this solution are foreign substances and should be removed.

This is an aqueous solution of iodine which, while it is slightly astringent, will not smart or blister the soft tissues, and when painted on the teeth and gums, produces little or no sensation. It leaves no stain on a clean polished surface, but the minutest patch of foreign substance can be detected at once.

Oral prophylaxis is a term used to distinguish thorough, periodical work of preventing dental pathological conditions from the so-called "cleaning" which generally means polishing the buccal and labial surface of the teeth with a rubber cup or brush wheel used in the hand piece of a dental engine.

For proper polishing in a prophylactic treatment, points of two different shapes, held in polishers, are required; first a broad, flat point to polish the distal surface of the last molars and buccal and lingual surfaces of the other teeth; and second, a thin, sharp point to reach the interproximal surfaces and near the point of contact. Dental tape is the only means of polishing one of the most vulnerable and inaccessible parts, i. e., the contact point and its immediate vicinity. Then we should stain and polish until the disclosing solution shows all surfaces clean. Of course, any substance which is not readily dislodged with the wooden point and a fine abrasive should be removed with scalers, and the surface highly polished.

Dental floss is a great aid in indicating the presence and exact location of small deposits of serusal calculus on the proximal surfaces just under the free margin of the gums.

It is our duty to smooth and polish any etched or roughened surface, for no patient can keep a rough surface clean. Etched surfaces are detected only by careful hand polishing aided by the use of a disclosing solution.

Unless a patient is suffering pain, when he first presents himself, let him know what is on his teeth. This can be done by painting the surfaces of the teeth with the disclosing solution. Give him a hand mirror and let him see how much accumulation there is on even apparently clean teeth. Suggest to him that if as much infectious and decaying matter were allowed to remain in one place on his hand, for weeks and weeks, as is allowed to remain on the teeth, he would be very much surprised if the tissue surrounding

such a mass did not become inflamed and hypersensitive, as often takes place with the tissues surrounding the teeth. While you are removing deposits, and planing or filing rough surfaces and polishing them down smooth, explain that the enamel of teeth is from 95 per cent to 98 per cent calcium salts, that decay is merely the result of a chemical reaction between the calcium salts of the enamel and the acids which result from fermentation, just as the rusting of a piece of steel is a chemical reaction, and is just as preventable by polishing; how starches are converted into sugars, and sugars into acids, and that all dental caries takes place only under plaques; how free acid in the saliva does not destroy the enamel, but that no mouth wash can reach acid under these plaques, and that no amount of brushing seems to remove them, but frequently improper brushing with an abrasive does a great deal of injury to gums and tooth surfaces.

Also teach him how to handle a brush properly. The essayist's plan is to have a patient always begin brushing on grinding surfaces of the back teeth, with a backward and forward and side to side motion; this is to clean the fissures. Then place the brush well up on the gums, and with a rolling motion brush towards the occlusal surface, i. e., up on the lower and down on the upper teeth, on both lingual and buccal surfaces. Never allow the bristles to prick the gums, for tooth brush bristles always carry infection. When brushing the lingual surfaces of lower molars, the tongue should be drawn well back so as to expose those surfaces of the teeth to the brush. Frequently, I give a demonstration showing the patient how to use a brush, and then have him practice before me until he uses it properly.

It is a very common thing for a patient to start brushing always in one place, usually at the gingival margins of some of the anterior teeth. This should be watched for and stopped, for while few do too much brushing, the brush is always stiffer when first put into the mouth, and this in connection with the first grit, if an abrasive is used, applied in one place year after year, is sure to cause gum recession and to wear through the thin enamel of the gingival third.

I recommend rather small brushes of medium texture. For lingual surfaces of anterior teeth a small brush, which can be used with a rolling motion, should be used, because an ordinary sized one bridges over the inside of the arch. I do not like the lingual

surface brushes which are used as a hoe, for they are sure to prick through and thus infect and injure the gum tissues. Enough brushes should be kept on hand all the time so that each brush is used only once in twenty-four hours, and the teeth and gums should be brushed after each meal.

The chief benefit derived from the use of a toothbrush is the removal of some of the loose debris and the hardened and healthy condition of the gums obtained from massage, but if a brush is improperly handled, it does as much, if not more damage, than good.

At least once each day ribbon tape or dental floss should be used to polish the proximal surfaces. When putting this past the contact points care should be taken not to allow it to snap against the gum tissue. Snapping against the gums can be avoided by taking a short hold, keeping tape tight, and holding the buccal end somewhat higher than the lingual, so that the tape passes the contact points rather sideways instead of snapping down on the gums.

This, with periodical visits to the dentist, will keep the teeth looking clean, but within from two to six days after a prophylactic treatment the tongue will discover little rough patches again gathering on the teeth, and the use of the disclosing solution verifies the discoveries of the tongue. The toothbrush will not prevent the formation of these fermenting patches, nor will it entirely remove them, even when used intelligently, and, to prevent pyorrhea and dental caries, it is necessary to have the teeth more than esthetically clean.

My patients are rubbing their teeth, cheeks and palates, and massaging their gums with a No. 4 cotton roll, one inch long, held in a suitable holder. I believe they are doing better work with this, in combination with the use of the dental tape, than they are with the tooth brush. Where it reaches, the cotton seems to remove debris left by the tooth brush, and it cannot injure the teeth or soft tissues. It also removes all viscous materials, dead cells and particles of food from the mucous membrane. The presence of these foreign substances tends to reduce the tooth-preserving properties of the saliva. As far as I know, the idea of this use of a cotton roll was first suggested by Dr. J. L. Kelly of Chicago.

With a little instruction, the majority of patients can be taught to use and are provided with a cotton roll carrier, supply of cotton rolls, polisher and points, dental floss and tape, mouth mirror and

iodin disclosing solution or the formula. Cotton rolls are used in massaging the gums and wiping debris from the teeth, cheeks, gums and roof of mouth. The handle end of the instrument I prefer for holding these rolls can be used as a tongue scraper. The only way to preserve the teeth of patients who do not care to learn how, or who haven't sufficient dexterity to handle a polisher is by frequent periodical prophylactic treatments by a dentist.

The time to elapse between treatments must be determined by experiment. Some mouths will remain reasonably clean for only fifteen days, others thirty, sixty or ninety days, but when the period has been established, notice should be sent regularly to the patients, for they procrastinate or forget entirely, and regularity of treatments is absolutely necessary.

A disclosing solution is essential in prophylactic work, for without its use we cannot tell whether or not all foreign substance is removed, and with its use we polish only where debris is lodged. We want to obtain absolute cleanliness with the least possible wear to the tooth surfaces.

The only time a dental engine should be used in this work is when we wish to grind out and smooth down rapidly any surfaces which have become etched or are starting to decay. If these places are sensitive, deliquescent chlorid of zinc, which will help to relieve tenderness, should then be applied. If the places are where discoloration would not be objectionable, a 40 per cent solution of silver nitrate should be applied, otherwise a 10 per cent solution may be used; the latter discolors only where decalcification has set in. All subsequent treatment should be given with a hand polisher, for a revolving rubber disc or brush wheel does the most wearing and polishing where the brush and cotton roll keep the teeth the cleanest. Also, if the revolving disc and brush wheel are allowed to touch the gums, they will cut and make scar tissue, which is sure to start recession.

DR. PICKERILL'S OPINION.

Dr. Pickerill says that acids will osmose through Nasmyth's membrane and cause decalcification, but thinks that with proper dietetics and by the use of acid mouth washes, calcium salts can be made to predominate in the saliva; that these salts, when they are held in solution by the presence of carbon dioxid, osmose through Nasmyth's membrane, and when the carbon dioxid passes off, they

precipitate in the outer surface of the enamel, thereby hardening it and increasing its resistance to destructive agents. He therefore rather discourages the polishing of tooth surfaces, for fear of damaging Nasmyth's membrane. If the results he reports to have gained from his experiments can be reproduced in general practice, his work will have been of great service to the public as well as to the profession. I have never been able to discover anything like the hard, tough membrane Dr. Pickerill describes, and other men who are working along this line give the same report. For protection against the accumulations which gather on the teeth of most people, I would rather take chances on the results gained from a clean, smooth tooth surface free from microbic plaques, than to depend upon a few epithelial cells which cling to newly erupted teeth.

To maintain a healthy condition of teeth and gums, it is necessary to have perfect occlusion, alignment and contact points; gingival margins of all fillings must be smooth, and no ill fitting crowns should be allowed to remain.

At the least suspicion of adenoids, or other nose or throat deformities, the case should be referred to a physician capable of correcting such pathological conditions.

Parents and children should be taught the value of thorough mastication and not to shun hard or fibrous foods, for by this process the jaws are developed and salivary glands stimulated.

Pyorrhea and decay are prevented by thorough cleanliness and pyorrhea is curable by the thorough removal of all foreign substances, proper treatment and maintained cleanliness.

In conclusion I wish to say a word about

THE DUNLOP VAPOR TREATMENT.

While traveling in the Orient, Dr. Dunlop conceived his idea of this treatment from using oxygen in the treatment of leprosy. He said that in his initial experiments on the alveolar process he had some very disastrous results with pure oxygen, so he modified oxygen with about twenty per cent of what he terms ethyl borate. From twenty to forty pounds of this modified oxygen gas is drawn off into a chamber in the machine. To give a treatment, a valve is opened and the gas passes through a so-called carbureter, where it is further charged with ethyl borate, which is an aqueous solution of boracic acid to which about four per cent of alcohol and a little essential oil are added. When this gas is allowed to escape

through a large nozzle it should carry a spray with it, which leaves a sediment on anything with which it comes in contact. This is used for cleaning out pus pockets. If the adjustment is right, the mixture, when forced through a needle, is volatilized and comes out as a gas with no moisture or visible sediment. This gas is what is used in the treatment of pathological conditions.

Dr. Dunlop has been working along this line for about eight years, but it was only about eighteen months ago that he succeeded in making a satisfactory mixture or in perfecting a machine with which to administer it.

This vapor, apparently, has an especial affinity for tissue in any pathological condition and seems to raise its tone or vitality. The gas enters the gum tissue and alveolar process through the little ducts in the inner wall of the gingivus.

Talbot describes these ducts as being limited to the interproximal gum tissue; Dr. Dunlop seems to think them most numerous on the lingual side, while my experience is that I can more often find an opening on the buccal or labial side. These differing opinions seem to indicate that the entire inner wall of the gingivus is lined with little ducts which open up when irritated. The gas appears to travel through either bony or soft tissue. It causes no pain, but little flashes can be seen plainly as it penetrates inflamed areas or comes bubbling out from around the necks of teeth at quite a little distance from where it has entered the tissue. Usually its travels can be felt by the patient. Congestion seems to leave almost immediately, and capillaries and arterioles appear to fill up with good, healthy red blood.

As I understand Dr. Dunlop's theory, pyorrhea is caused from some form of irritation which produces partial stasis, and that irritants, usually calcic deposits, are lodged on, or in the pericemental membrane; that nature, since it has the power to cause these deposits, also has the power to reabsorb them when the circulation has been sufficiently stimulated. This he claims his vapor treatment does, and a cure will result. This applies only to deposits under tissue which can be made vascular.

The scaling off of all visible deposits and thorough prophylaxis are as necessary in this treatment as in any other.

I have had some very gratifying results in some cases, and in others not as satisfactory, but inflammation appears to have been

greatly reduced in all cases in which the vapor treatment has been used.

I would like to quote just two of the many interesting cases in which the Dunlop vapor treatment has been very successful.

Case No. 1—Patient had a bad case of pyorrhea, even though all exposed surfaces of the teeth were scrupulously clean. A number of teeth were loose and had a little deposit well up under the gums in places, but the whole condition seemed to be one of lack of tone or vitality. She said it was not uncommon for her to wake up in the night with extremities so numb that it would take an hour of chafing and rubbing to restore sensation. Most likely this was due to poor circulation caused by poisoning from the absorption of pus. After two weeks, during which time she was given six treatments with the vapor, this condition began to disappear. The congested areas which were well marked high up on the gum tissues had also disappeared. The flow of pus diminished and the teeth which were very loose became firmer. Treatments were given once a week for a month, then I saw her about once a month for a while. Pus has entirely stopped and all the teeth are firm. The gum tissues look perfectly healthy and good circulation seems to have been re-established. She feels better than she has for several years and has gained fifteen pounds in weight. She has required only three one-hour appointments for prophylactic work during the ten months she has been my patient. I found that the cleanly condition of the surfaces of her teeth were due to the fact that, through the advice of her physician, who is one of my patients, she had been using a polisher for some time before coming to me.

Case No. 2—Patient had been troubled with a series of boils for over two years. She had also had considerable soreness in the region of the left tonsil. Her physician suggested pyorrhea as a possible cause of the infection. After instrumentation the pus stopped, the gums appeared healthy and the boils ceased, but the throat trouble kept up. The lingual root of the upper left first molar was entirely denuded, so I separated it from the buccal roots and removed it. The first time the vapor treatment was tried on her it was applied to these buccal roots. It flashed forward as far as the lateral incisor and also inflated the left tonsil. After three treatments I was unable to get the vapor into the tissues, and she has not had any more throat trouble.

Dr. Dunlop's instructions are to inflate the process at a distance of as many teeth from the bad pockets as it is possible to get the vapor to penetrate into them, and not to introduce it into bad pus pockets until there is a good, healthy circulation established in the tissue surrounding them.

In starting to treat a new case, all deposits which are not well up under the gums should be removed, care being taken not to injure the pericemental membrane, and all tooth surfaces, including just under the free margin of the gums, thoroughly polished, and periodical prophylactic treatments should be kept up. Two or three vapor treatments a week should be given for a couple of weeks, then one treatment a week for a few weeks, and then an occasional vapor treatment when indicated. The vapor cannot be forced into healthy tissue.

I have had a number of other very interesting results with this treatment in acute and chronic abscesses, pyorrhea and other inflamed and pathological conditions.

Dr. Loeb in his recent book, "The Mechanistic Conception of Life," says, "Life of warm blooded animals--man included--ends with cessation of oxidation in the body.

"As soon as oxidations have ceased for some time, the surface films of the cells, if they contain enough water and the temperature is high, become permeable for bacteria, and the body is destroyed by micro-organisms."

What more favorable place for the breaking down of tissue cells can be found than in the congested areas of the alveolar process and gum tissues where there is moisture, body temperature and lack of oxygen? The Dunlop vapor furnishes oxygen to these congested parts, promotes normal cell activity and thereby growth. It immediately restores the bright red color to cyanotic tissue, and stimulates circulation, thus supplying food for the newly formed cells to exist upon.

By pressure, it forces microorganisms and their by-products out into the healthy tissues, where the leucocytes have a chance to combat them, and wherever it carries them it also places the modified oxygen, thereby adding to the vitality of the parts. This, if not carried to excess, should have the effect of autogenous vaccine, which produces antibodies. These increase the number of leucocytes and raise the opsonic index against the infecting organisms.

Patients will allow a dentist to do that work in which he has the most confidence. If he thinks gold inlays are better than gold fillings, he will make more inlays than fillings. If he is looking for cavities and pyorrhea, he will find them. If he is looking for *that which causes cavities and pyorrhea*, he can find that also, and if he acts promptly, he can stop the destructive processes from developing. I will leave it for you to decide which is the better dentistry.

No dentist whose own mouth is in an unsanitary condition is in a position to talk oral prophylaxis to his patients, for in order to convince his patients he must know from experience, and thoroughly believe in what he advocates.

FEES.

Oral prophylactic work should command as high, or even higher, fees per hour, than fillings, inlays, crowns, bridges or plates, for better service is rendered patients, and a just compensation should be had, and if a dentist once convinces himself of the value of this work, it is very easy to convince his patients.

A PRACTICAL APPLICATION OF THE BONWILL THEORY IN MAKING ARTIFICIAL DENTURES.

BY W. C. DALBEY, A. M., D. D. S., DU QUOIN, ILL.

The advancement made in the last few years in the making of artificial dentures has been very gratifying. But there is an old theory, or I might say discovery, that has of late years been lost sight of. This is Dr. Bonwill's theory, or discovery, that the human mandible as related to the teeth forms a triangle whose apex is the central incisors, and whose base line is from the center of one condyle to that of the other.

Dr. Bonwill took, as his average, a measurement of four inches for the base line of his equilateral triangle. One of the main objects of this theory was to establish the correct position of the central incisors, and, of course, the other teeth sustained their proper relationship to these. While the writer believes the theory to be a good one, he has never seen a real practical application made of it, from the fact that not only have articulators been made out of harmony with this theory; but also that it being only an average of four

inches would preclude it from the exactness to which men of science today are trying to bring the art of denture making.

This base line, from center to center of the condyles the writer has found to vary all the way from three and a half inches to five and a half inches. So, merely to take an average of four inches would be out of harmony with the latest scientific methods of establishing the correct relationship of the teeth for each individual case in the making of artificial dentures.

The writer believes that he has devised ways by which each individual case may be measured accurately according to the Bonwill theory, precluding, however, the average of four inches. It is needless to say, to make an artificial denture, that the patient may get the most good from it. The teeth in this denture must be arranged to an exact anatomical science; also the planes and angles of the teeth must conform to nature. It is very gratifying to know that manufacturers have lately contributed to the art of denture making their beautiful anatomical teeth. With these, together with the latest scientific knowledge and a correctly made anatomical articulator, there is no excuse for any dentist to give to his patients anything but the best of service in making artificial dentures.

While it is easy to carry out the Bonwill measurements upon the mandible of the skull, it is quite another thing to carry out these measurements upon the living subject, because the deep imbedation of the condyles precludes their centers being measured. The writer has discovered that the length of Bonwill's base line may be found at a different position than from the centers of the condyles, and that it can be measured absolutely correctly from the living subject: and he has devised a simple instrument for this measuring.

If you will take the mandible of any skull and measure the posterior border of the rami just below the necks of the condyles, that is, from border to border at this point, you will find this measurement to be the exact distance between the centers of the condyles of the same mandible. With this instrument this base line may be measured exactly upon the living subject. The instrument consists of an especially devised calipers,—see illustration, 1A,—whose points are enlarged and are similar to the ordinary sewing thimble in shape. It has a lock thumb-screw,—d illustration 3,—to lock the instrument after the measurement is taken. The points of the instrument are placed upon the subject just back of, and snugly

inward from the lobules of the ears. See illustration 2. This measurement is then transferred to an especially made articulator, which is adjustable to any measurements made by the calipers. See illustration 3. In the thimble points of the calipers, near their ends, are small holes (e, e, illustration 1) that telescope points just above the centers of the condyles of the articulator. These points above the condyles are shown at c, c, in illustration 1, B.

When the calipers are placed upon the articulator there is a

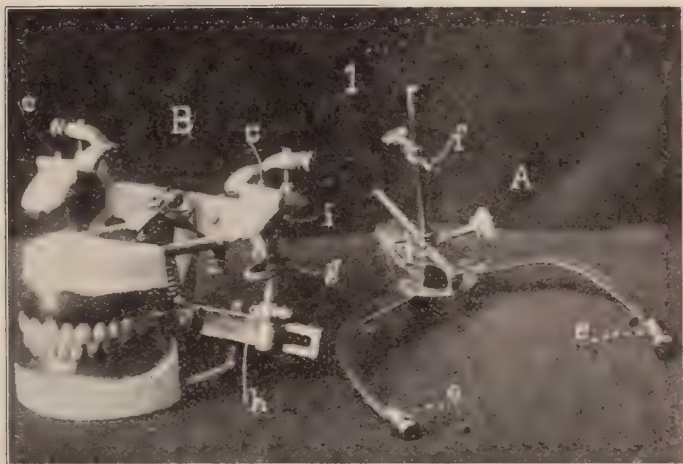


Fig. 1.

rod projecting downward which holds a point (illustration 3, f) designating where the central incisors are to be placed. The position of this is to be found by measuring the base line from center to center of the condyles of the articulator. The incisor point is then moved upward or downward on the rod until the distance from this point to one of the condyle points equals the distance between the condyles, forming an equilateral triangle, conforming to the equilateral triangle of any individual case in hand.

A word also might be said about this very interesting articulator. Any scientific measurements are useless if the articulator does not conform to every anatomical movement of the human jaw. This articulator is adjustable to the measurements of any case. The condyles are of natural shape and size. They operate within fossi that correspond also in size and shape to that found in the human.

The fossi are adjustable from thirty to sixty degrees, which will meet the demands of any case. They have the natural downward

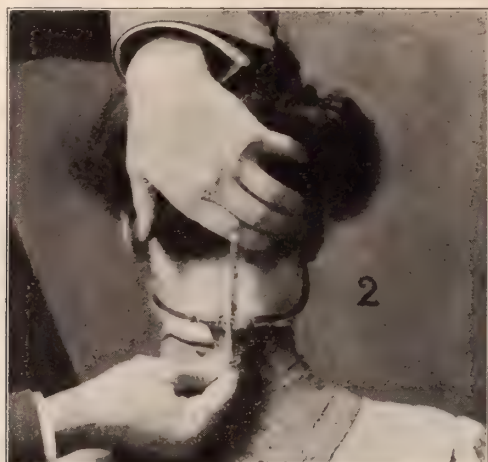


Fig. 2.

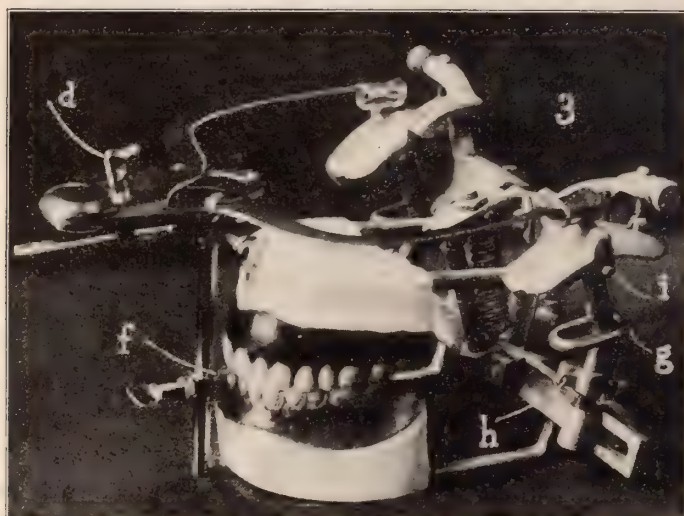


Fig. 3.

inclination, and inward planes at an angle of seventeen degrees that is found in the human. It is now universally known that the con-

found half-way between the contact point of the condyle and the posterior end of the occlusal plane also back five-eighths of an inch from a vertical line running through the condyle. See, g, illustration 3. The point of rotation in this articulator corresponds with the foregoing specifications.

When the incisal point upon the calipers is found, this point becomes the anterior end of the occlusal plane. The posterior end of the occlusal plane is shown at h, in illustration 3.

Upon the sides of the condyles in this articulator,—seen at i, in illustration 3,—are points for the use of the Snow face-bow, if the operator desires to use it instead of the calipers. The writer thinks, however, the calipers are much simpler and more easily manipulated than the face-bow scheme.

OCCLUSION WITH ARTICULATION.*

BY J. E. SCHAEFER, D. D. S., CHICAGO, ILL.

I have chosen this title because it expresses to me in a practical way the result we wish to obtain in the arrangement of artificial teeth.

It is well therefore to draw a distinction between these terms. Occlusion is defined as the act of closure or the state of being closed. We have occlusion of the teeth when the jaws are approximated and the mandible is in its most posterior normal position; the teeth are all properly interdigitated.

Articulation as applied to the teeth exist when the mandible occupies any position under the one of rest. The teeth are in contact, but not interdigitated.

In the construction of artificial dentures we are desirous of obtaining both occlusion and articulation. All dentists obtain occlusion for their patients, but most dentists do not give their patients the benefit of articulation. Articulation means efficiency, it gives the patient the power to grind his food, while occlusion only permits of mashing the food in a straight up and down movement. Articulation permits of the lateral movements in a rotary fashion which are the natural movements of mastication. The reason why people have so much trouble in masticating the food with dentures

*Read before the Northern Illinois Dental Society, October, 1912.

dyles are not the center of rotation, but the center of rotation is where occlusion alone has been considered, is, that they must re-learn how to eat. They must break themselves of a habit which has been formed through years of usage. They must cease to use the lateral movements and restrict themselves to the up and down movement.

I believe most dentists are more interested in the practical solution of this problem than in its theoretical explanation, while a knowledge of the laws governing the movements of the mandible and the influence of these movements upon the forms and positions of the teeth is of great assistance in arranging them properly. This knowledge is not absolutely necessary for any man with a little practice can arrange teeth so as to obtain occlusion with articulation without attempting to solve the geometrical problems involved.

It was Bonwill who first called our attention to the importance of obtaining articulation. He conceived the idea that the human jaw formed an equilateral triangle and from this conception constructed an anatomical articulator. He claimed that any one conversant with mechanical drawing could reproduce a working model of artificial teeth which in the mouth should work as perfectly as in nature.

He also called our attention to the necessity of using large bicuspid and molar teeth. He devised a method of grinding their occlusal surfaces by deepening the sulci between the outer and inner cusps so that he obtained an intermashing of the cusps and an articulation which on his articulator balanced or preserved a sliding contact in the lateral movements, and had three points of the teeth in contact during the forward excursions.

While Bonwill's conception was too idealistic, he, nevertheless, laid the foundation of our present understanding of "Anatomical articulation," and was the first man to construct an articulator by means of which he attempted to reproduce the movements of the mandible. The criticism advanced against Dr. Bonwill's articulator was that it did not permit the reproduction of a correct condyle path.

It is advisable at this time to refer briefly to the meaning of the condyle path. If we examine a human skull we find that the temporomandibular articulation is formed by the head of the condyle articulating with the glenoid cavity of the temporal bone, and is

more or less complicated by the interposition of an articular cartilage. This joint is a complexed one and permits of a great variety of movements. While it may be very interesting from a theoretical viewpoint to speculate on the various excursions of the mandible, practically, we are only interested in those limited movements produced during mastication. We find that in masticating on either one side or the other, the condyle on the working side becomes a balancing center, while the condyle on the opposite side moves backwards and forwards along the eminentia articularis. The course taken by the head of the condyle during these various movements of the mandible has been called the condyle path.

It has been proved that this path is generally an inclined one; the inclination not only varying in different persons but also varies on either side on the same individual. Dr. Gyzi has shown us that this variation may be anywhere from an angle of five degrees to that of an angle of forty-four degrees in different persons, and in the same individual this variation may be anywhere from one to twenty degrees between either side.

Dr. Bonwill's articulator at all times only permitted a movement in a horizontal plane; consequently a path corresponding to the natural one could not be reproduced. The result was that dentures which articulated accurately in his articulator might be faulty when tried in the patient's mouth and consequently a better articulator was needed, one which would permit of reproducing the natural condyle path in each individual case.

Evidently Dr. Bonwill was a prodigious investigator, for he measured the mandibles of ten thousand specimens to determine the average distance from condyle to condyle and from condyle to the median line of the lower central incisors. From these measurements he determined that the average distance between the points mentioned was four inches, and that the lower jaw formed an equilateral triangle. He obtained these measurements to determine at what distance from the articulator joint the models were to be mounted. However, in this same statement in which he says that the average distance was four inches he tells us that in some cases it may be as great as five, thus refuting the accuracy of an average measurement.

In mounting models on the articulator Dr. Bonwill used a pair of dividers. He placed one point of this instrument at the

articulator joint and the other end at the median line of the lower wax base plate, being careful to have the dividers set so that they measured four inches from point to point. This method of mounting models only locates the one point at best with no assurance that the rear part of the model is not being swung from side to side or raised or lowered without disturbing the distance from the median line of the models to the articulator joint. However, the use of the dividers was the forerunner of the face-bow. The face-bow not only determines the proper distance at which the models are to be mounted in each individual case, but also affords the means of obtaining the proper plane of the alveolar ridges in relation to the condyloid joint and permits of reproducing this relation on the articulator.

From the foregoing remarks I have attempted to show first, that it is necessary to have an articulator capable of reproducing in a fairly accurate manner the movements of the mandible based upon a proper condyle path; and secondly a method by which the position of the model on the articulator can be obtained so that the alveolar surfaces of the models will bear the same relation to the articulator joint that their originals do to the condyle joints.

Therefore, our first consideration is the articulator. Dr. Walker of Pass Christian, Miss., after working with Dr. Bonwill's articulator soon discovered that it was faulty in that it did not permit of reproducing the natural condyle path. After a great deal of thought he constructed a mechanical device, which he called his "Physiological Articulator." It proved to be so complicated that it was never placed upon the market. The work of Dr. Walker, however, led others to consider the subject, and many attempts were made to construct an articulator which would meet all of the practical requirements. As a result of this work we have had the Kerr, the Stephan, the Gritman, Dr. Weiss's Modified Bonwill, the Snow, or 20th Century articulator, and finally the latest and most scientific device, the articulator constructed by Dr. Gyzi, of Zurich, Switzerland. The last one mentioned without doubt comes nearest to reproducing the actual movement of the mandible.

Dr. Gyzi has gone a step farther by his method, in that, he determines the centers around which the condyles rotate and reproduces them on the articulator. Most articulators have the rotation centers in line with the normal position of the condyle. Dr.

Gyzi has shown us that when the condyle on the working side becomes the center of rotation, that this center of rotation may be either internally or externally to the natural position of the condyle. However, Dr. Gyzi's articulator has not been placed on the market, at this time, so I have chosen the 20th Century articulator in connection with the Snow face-bow, which is a very simple and practical device.

Having chosen the articulator we now proceed to apply it practically and to consider the various steps involved. The foundation of good dentures is laid when good impressions are taken and in describing the various steps in taking the bite we naturally suppose that good models of both jaws have been obtained.

Over each model a thin sheet of some rigid base plate material is moulded and properly trimmed to allow for the movements of the buccinator muscles and the attachments of the phrenum. A sheet of wax is then gently heated and formed into a roll which is moulded and sealed to the base plate along the ridges of both models. Sufficient wax is then added to bring out the approximate contour of the base plate. This is afterwards modified or added to when fitted into the patient's mouth to restore the proper facial expression.

This phase of the work offers a field for the application of one's artistic talents. We have all observed the "dropping expression" around the mouth due to the loss of the natural teeth. This is particularly noticeable after the extraction of the upper permanent cuspids. The alveolar process becomes absorbed, allowing the soft tissue to sink in, creating a deep furrow along the nasio-labial groove. Much of the natural expression of the face can be restored by lifting the soft tissue upwards in the cuspid region. A denture, as a rule, can be worn high in the cuspid area. It must be lowered in the buccinator region, and again extended upwards over the maxillary tuberosity. With a little experience, we soon learn where to add wax, and where to trim in order to obtain the most natural expression of the face.

The length, labially of the upper base plate is determined by the lower margin of the upper lip, when the latter is in a position of rest. The wax should extend about 1-16 in. below the rest line. The occlusal surface of the upper base plate should be flat, and directed in a horizontal plane, when in the patient's mouth.

It is preferable to build the upper base plate to the form desired, and then fit the lower to the upper. This method makes the process of "taking the bite" more simplified. Having built the upper base plate to its proper length, we can now determine the amount the bite is to be opened by the lower base plate. This is accomplished by either adding wax to the lower, thereby increasing its height, or trimming the wax down and lowering it if necessary. If the lower base plate is too high (providing of course that the upper has been properly built) the patient will not be able to bring the lips in contact when both jaws are together, without a muscular effort. If the lower base plate is not sufficiently high, a puckering of the lips will be the result. The proper bite or distance between both jaws is obtained, if the base plates are so built, that when the jaws are approximated the lips will just meet.

Great care should be exercised when taking the bite to have both base plates strike uniformly when they are brought in contact. Any tipping which is not observed and corrected, when the jaws are approximated, will result in obtaining a faulty relationship between the upper and lower model. I wish to call your attention to this fact—that the use of the face-bow has nothing to do with obtaining the proper relation of the lower jaw to the upper. Any mistake made in obtaining the bite will result in faulty occlusion as well as faulty articulation.

When both base plates have been trimmed so that they strike uniformly, and contour so that the proper facial expression is produced, before going further, it is well to obtain certain guides which will assist us later in selecting the artificial teeth.

We have all observed that when most people smile, they raise the upper lip until its edge is on a level with the necks of the central incisors. The position of the high lip line, as it has been called, is of great assistance in determining the length of the artificial teeth. The lower lip is also depressed in laughing and registering this on the lower base plate assist us in determining the length of the lower anterior teeth. Marking the positions of the corners of the mouth on the base plates when both jaws are approximated and the lips are in a position of rest, is of assistance in judging the width of the six anterior teeth. The median line should also be noted and marked on the base plates. It should always be determined by the median line of the face, as this is the only true guide.

Our next step is to locate the positions of the condyles. With both base plates in the mouth, the patient is requested to open and close the jaws. The index finger is placed immediately in front of the external opening of the ear, and by having the patient depress the lower jaw, the index finger drops into the depression created by the forward movement of the condyles. This point is then marked on the patient's face. It is to guide us later on in adjusting the face-bow. The upper base plate is now removed from the mouth and the fork of the face-bow is embedded in the wax in line with its occlusal surface. Having accomplished this, the upper base plate is returned to the mouth and the patient is requested to open and close the jaws. When you are certain that you have obtained the proper relation of the lower jaw to the upper, the base plates are fastened together, either by sealing them with wax, or using wire staples. This step is very important, and is commonly called "taking the bite." Every practitioner knows what a faulty bite means. Any mistake made in obtaining this relationship results in wrong occlusion as well as articulation. The face-bow does not correct mistakes made in "taking the bite."

Having sealed the base plates together, our next procedure is to adjust the face-bow. The latter consists of a fork which is detachable and a bow carrying two sliding rods. The sliding rods are adjusted to the points which mark the position of the condyle and have, therefore, been called the "condyle rods."

The forks being in position in the upper base plate, the bow is slipped over its end, and the rods are adjusted to the marks on the patient's face which located the position of the condyles. The set screws controlling the condyle rods and the fork are tightened so as to fix this relationship.

In adjusting the condyle rods, care should be taken to have them equally distant from the patient's cheeks. The face-bow and bite plates are now removed from the mouth intact, and the models are ready for mounting to the articulator.

The 20th Century people are now supplying a support which holds the articulator in position while the models are being mounted. This is of great assistance. The condyle rods are now forced inwards as far as possible and firmly locked. On the inner end of each rod there is a recess which fits over a pin located at the articulator joint. The condyle rods are adjusted over these pins and the

upper model is attached. Care should be taken when attaching the model, to have the bows of the articulator in a horizontal plane, and to have the fork of the face bow parallel to the bow. When the plaster has set sealing the upper model, the case is inverted and the lower model is attached.

Our next step is to take the protruded bite, which determines the inclination of the condyle path. We remove the face-bow and fork from the articulator and place the bite gauges on the lower base plate at the molar region, the bite plates are then returned to the mouth, and the patient is requested to protrude the mandible about $\frac{3}{8}$ in., bringing the anterior part of the base plates in contact. The bite gauges fill in the spaces at the heels of the base plates, and maintain them in this position. The base plates are now removed from the patient's mouth and replaced on the articulator to determine the inclination of the condyle slots. We release the controlling spring of the articulator and loosen the set screws which hold the condyle slots. The upper bite plate is now placed on the upper model and the lower model is worked into the lower bite plate. This adjustment determines the slant of the condyle slot. We then tighten the set screw, controlling the slots, remove the bite gauges and attach the controlling spring which returns the articulator to its original bite position.

Having mounted the models to the articulator and having established the proper condyle path, we now proceed to modify the occlusal planes of both base plates from flat surfaces to curved ones. This becomes necessary because of the inclination of the condyle path. If the mandible moved forward on a straight line, the occlusal planes of our base plates could at all times remain flat and horizontal. In the examination of natural dentures, having a full complement of teeth we find that when they are viewed from the side, the teeth present a curved arrangement from before backwards. The bicuspid is on a lower level than are the molars. The anatomist Spee was the first to call our attention to the relationship existing between this tooth curve and the slant of the condyle path. It has therefore been called the "curve of Spee," also the "compensating curve."

If we view the same dentures, anteriorly, with both jaws apart, we will observe that there is also a lateral inclination of the bicuspid and molars, which assists in compensating for the same

downward slant of the condyle path when the mandible is moved from side to side. It is necessary to have some idea of this natural arrangement of the teeth, because it is through the inclination of the second bicuspid and the molars that articulation is obtained.

Having this arrangement in mind, we proceed to change the flat surfaces of our base plates to conform with the inclination found in the natural tooth arrangement. They are modified so that both base plates will remain in contact when the lower model is protruded or moved laterally. When this has been accomplished, the arrangement of the teeth becomes quite simple.

Having carried our case to the point where we desire to arrange the teeth, we will now consider their selection. In selecting artificial teeth, there are two phases to consider—the mechanical and the esthetic. The mechanical side deals with the form of the tooth, anteriorly, as it is related to the bite and ridge, while posteriorly it deals with the proper form of the occlusal surfaces. A proper consideration of this phase of tooth selection simplifies their proper arrangement and entails less work for the operator. A judicious selection of the teeth will save a great deal of trouble.

The lingual surface of an anterior tooth is divided into three parts, namely, the bite, the shut, and the ridge lap. The bite is that portion of the tooth extending from the pin guard to the incisal edge. The shut of the tooth is placed between the ridge lap and the bite; this part of the tooth contains the pins. The ridge lap extends from the pin upwards to the extreme neck of the tooth.

A tooth having a long bite and a short ridge lap would be counter indicated for a case where the ridge in the upper jaw was prominent, the lip short and the shut of the bite close. The short ridge lap would not permit of the neck of the tooth being extended upward over the ridge; consequently there would be too much of the tooth exposed to view. The tooth indicated would be one having a short bite and a long thin ridge lap.

A thick ridge lap where bulk is counter indicated would necessitate grinding to prevent an undue bulging of the lips. A short bite tooth is not the proper one where there is a long shut of the jaws.

A long bite is the only tooth indicated where we find posterior teeth remaining in the jaw which have been worn away by abrasion, so that when the teeth are occluded the anterior portion of the jaws are brought close together.

Dr. Clapp in his article on "The Mechanical Side of Anatomical Articulation," suggests the following method for determining the combined and shut of the tooth indicated. "Hold the upper bite so that the palatal surface may be seen, and thrust a pin horizontally backwards from the labial surface at the median line so that it will be on a level with the most dependent part of ridge. When properly done, the pin can be seen to just pierce the ridge surface of the bite, as it passes. The distance from the pin hole to the labial-incisal angle will then be the minimum bite and shut available for the case. The length of the bite can now be determined; a medium bite is most favorable for the majority of cases."

The size of the posterior teeth is determined by the requirements of the case. Little can be said relative to the forms of these teeth as the splendid moulds gotten out by the manufacturer leave little to be desired.

The esthetic side of tooth selection is all important, as it involves a selection of the teeth according to the temperament of the patient, and includes the consideration of the shading of the individual teeth according to the variations which exist between the natural ones.

Temperament is the term applied to the physical organization peculiar to any individual. It depends primarily upon heredity, and consists of the relative influences exerted upon the individual of the assimilative, lymphatic, circulatory and nervous systems. The stomach, liver, lungs, heart and brain are all factors in the differentiation of temperament, and according to the congenital predominance of one or the other, or any combination of these forces, the individual is assigned to one or the other of the basal or mixed temperaments. Each temperament is the result as well as the indication of the preponderance of one or another of these systems and of their relative functional activity. In these temperamental differences no single sign is more significant than the one to be found in the physical characteristics of the teeth, their size, color, density and alignment. A knowledge of the temperaments is the only proper basis from which to determine the form and color of the teeth from edentulous cases.

The temperaments have been divided into four basal types, namely, the bilious, sanguineous, nervous and lymphatic. The following indices have been suggested by Dr. A. H. Thompson (Am

Text-Book of Pros. Dent.) as the proper guides to determine the form and shade of the teeth.

In the bilious temperament the predominating organ is the liver, the stature of the individual is medium or tall contour, angular and rugged; massive and ungraceful; skin and complexion, coarse and dry; olive tawny or dull, hair coarse dark (often black) and abundant; eyes black or brown, small and piercing. Types of tooth indicated, size large and strong; shape conical; long and angular; color, bronze yellow, texture dense and hard; arrangement close set and regular; articulation, firm, close and well locked; plane much curved.

In the sanguineous temperament there is a predominance of the arterial circulatory system and of the lungs and capillary vessels generally. The stature of the individual is generally above the medium, sometimes quite tall, contour slight and graceful or full but not heavy, skin fine, soft and transparent, complexion fresh and ruddy; the hair blond, red or chestnut, rarely dark or black; the eyes blue, brilliant and expressive. Tooth indicated size medium; shape well proportioned, curved and rounded, color cream yellow darker at the neck, texture rather dense and strong arrangement rather close and regular, articulation moderately firm and close; wears to square bite, plane curved.

In the nervous temperament there is an excessive development and morbid activity of the brain and nervous system. The stature of the individual is generally below the medium, slight and wiry; contour thin and habitually emaciated; skin fine and pale complexion, sometimes sallow; hair fine, light and soft, the eyes light gray or blue, restless and often morbidly brilliant. The tooth indicated; size small or medium, shape long conical and rounded, color, pale blue or gray, texture, average density or soft, arrangement, irregular disposed to lapping and malposition, articulation, long and penetrating but irregular.

In the lymphatic temperament the predominating influence is due to the lymphatic system. The stature of the individual is rather above the medium but sometimes below the contour, fulness of the body, sometimes amounting to corpulence, and without grace or beauty, skin a dull leaden white, faded or yellowish and generally cold and moist; hair fine and silky but lusterless, a pale blond or sometimes reddish or flaxen; eyes pale blue or gray; faded and

expressionless. Tooth indicated shape ill-shape; broad and flat, size large and coarse; color pallid, opaque muddy or yellow, texture brittle and chalky, arrangement not close but regular; articulation, loose, flat and irregular; plane flat.

Having considered the form and size and color of the tooth indicated, there remains another feature which is related to the artistic side of tooth selection, and that is the consideration of the variation of the shades existing between the individual teeth.

Dr. Royce read a paper before the Chicago Dental Society in 1901 in which he called our attention to this fact. In comparing these variations, he selected the upper central incisor as the basal or zero unit of his scale. The following comparisons were taken from Dr. Royce's paper:

Age 20.

	C.	L.	Cus.	1st bi.	2d bi.	1st m.
Upper	0	1	4		3	
Lower	0	1	3		2	

Age 20.

Upper	0	2	8	3	4	4
Lower	2	3	7	8	8	4

Age 30.

Upper	0	1	7	5
Lower	0	2	3	5

We note from these figures that there is a general darkening of the teeth from the centrals to the cuspids and then they grow lighter as we pass back to the first molars. There is no doubt that a proper consideration of this variation produces a more natural appearing denture.

It is well, therefore, to keep this variation of the shades of the teeth in mind while selecting them. However, another method has been suggested which offers great possibilities for producing these natural variations as well as any discolorations desired. It is a method which is simple and inexpensive and to the dentist who is not within easy access to a dental supply house it must prove invaluable. The plan suggested is to shade the teeth in any way desired by using the "Lennox China Paints." These colors are applied to the teeth and fused into the porcelain by means of the

electric furnace. A few primary colors and a little experience is all that is necessary.

Dr. Roach of Chicago has suggested to the Abbot people from whom these paints are obtained that he will mix the colors, which are most necessary to bring out the desired variation, so that any dentist can supply himself with this mixture and all that remains for him to do is to apply these colors and fuse them into the porcelain according to the directions. Dr. Roach has told me that he does not go to the trouble of selecting shades at the supply houses, but uses these paints to match up his teeth. We all know that teeth as they come from the manufacturers lack individuality and it is necessary for the dentist in some way to vary this sameness of color, and there is no way by which he can do this better than by using this method.

In trying out this plan at the college last week I was more than pleased in a result obtained with a full upper denture. The case was one in which there remained six or seven lower anterior teeth; they were badly stained with tobacco, as the patient was an inveterate smoker. We selected a tooth which was matched as closely as could be with the S. S. W. shade guide, which when tried in the mouth with the teeth mounted in the wax, made an unpleasant effect, owing to the uniformity of shade. They seemed to lack a natural appearance. The same teeth were then stained with a thin coating of the "ochre yellow" and baked in the furnace. This slight change in their shading was just the thing needed and the result was indeed highly gratifying.

Having selected our teeth and having previously modified our base plates so that their occlusal surfaces conform to the inclination of the condyle path, we now proceed to arrange the teeth anatomically.

The fourteen upper teeth are placed in position, care being taken to have the occlusal surfaces of the bicuspid and molars rest flatly on the lower base plate. The curves previously produced by means of the base plates are by this process transferred to the upper teeth. The lower teeth are then arranged to the uppers.

It is well to start with lower second bicuspid which should occupy the interspace between the upper bicuspids. The lower second bicuspids are followed by the lower first molars, these by the second molars.

The placing of the second molars is quite important, as these teeth form the balancing points during the lateral and protrusive movements of the lower jaw. You will find that it will be often necessary to give these second molars more of an incline than the curves produced in the wax base plates would indicate. A deepening of the sulci of both the upper and lower second molars will give more of a cusp-overlap which will be of assistance in maintaining balancing contact.

The splendid moulds made by the manufacturers simply allow the teeth to drop into their proper places. While arranging these posterior teeth it is well to move the lower model from side to side to test the articulation. If any one tooth strikes too hard it should be ground slightly.

There are several advantages in arranging the lower posterior teeth previous to the anteriors. By placing them in the order desired little trouble is experienced in obtaining articulation and we are always certain to obtain proper interdigitation.

The placing of the lower anterior teeth now becomes a simple matter of filling in the space between the lower bicuspid.

Trouble, however, is sometimes experienced with cuspid interference. This can be overcome by shortening the distance between the mesiolabial angle and the summit of the lower cuspid and lengthening the distance from the mesiolabial angle to the summit of the upper cuspid. This simple preparation of the incisal edges permits the upper cuspid to pass between the interspace of the lower cuspid and first bicuspid. In placing the lower incisors it may be necessary to narrow them slightly or overlap them a trifle, the latter tends to make them appear more natural.

Little overlap should be given the anterior teeth as a decided overlap would necessitate a deepening of the sulci of the posterior teeth; this would increase the leverage formed by the interlocking of the cusps and would have a tendency to unseat the dentures during mastication.

Having completed the arrangement of the teeth, the case is now tested to observe whether proper articulation has been obtained. The lower model is protruded, bringing the buccal and lingual cusps of the lower teeth in alignment with the corresponding cusps of the upper teeth, and the anterior teeth in an end-to-end position. If the proper articulation has been obtained, the second molars will strike at the same time the anterior teeth strike end to end.

In testing the lateral movements the teeth on the working side are in contact from the median line to the last molar. On the opposite side we have contact of the teeth usually at but one point, this falling as a rule on the mesio-lingual cusp of the last upper molar with the disto-buccal cusp of the lower second molar. The latter point forms the balancing contact and prevents the dentures from tipping during mastication.

In conclusion I wish to say that I have little patience with the man who questions this method of arranging teeth, because there is no question that these principles are correct. The dentist who does not consider articulation is giving his patients an inferior article.

I do not hold that occlusion with articulation will overcome all of the inconveniences connected with wearing dentures, but I do believe that this method of tooth arrangement will assist matters and make dentures more efficient.

DISCUSSION

DR. E. L. GRIFFITH, Freeport, Ill.:

Mr. President and Members: First I want to congratulate Dr. Schaefer on his most excellent paper. He has selected a subject of which every dentist has need to learn all he can. Dr. Schaefer has given you this methods, and I can add nothing now. Of course, the correct bite is essential and is the determining factor in after results. This must be correct or all of the patent face bone, articulators, etc., will do no good. Personally, I have best results by using Ideal base plates, as they do not change shape caused by heat of the oral cavity and after teeth are set up, using soft pink wax to attach the teeth to base plates try teeth in mouth and patient closing teeth hard, they practically form their own occlusion and articulation. Many articles have appeared in dental journals on the subject, but the latest I have read is in the September *Cosmos*, page 1,066, title "A Method of Anatomical Articulation of Teeth After Vulcanization," which I hope you will all read when you return home. In conclusion, "If after all your time and professional skill is embodied in this work demand and collect a fee in proportion."

THE YOUNG CHILD'S MOUTH.*

BY DR. J. N. PIKE, D. S., D. D. S., MINNEAPOLIS, MINN.

In a recent address Dr. Chas. Mayo of Rochester, Minn., made a statement to the effect that the future of preventive medicine lies with the dental profession as one of its very foundation stones. How accurate the statement of this well known authority may be the future only can tell. It is certain, however, that we as a profession have a grave responsibility which is becoming more apparent with each year. Not only the medical profession but the whole public are fast becoming educated to the value of normal mouths possessing normal function, and we are in a position to know what a small number of persons of any age possess them. To obtain such mouths we must turn over a new leaf and obtain a new viewpoint. If we were all community dentists employed by the state where we had reasonable equality of opportunity and where the worker obtained full value for his services for what he produced, we would not be spending practically our entire time and skill repairing the ravages of disease and endeavoring to restore more or less completely wrecked mouths and people to a semblance of the normal; but we would devote a large part of our time to a more efficient method, yes, a hundred times more efficient method, for even with our present knowledge we could easily become one hundred times more valuable if other social conditions made it possible for us to do so. There is no doubt that if the dental profession were to cease working for all adults and devote their entire time properly to children they would do ten times the good they are now doing, and properly directed and properly occupied we could do much more than that.

However, we are held in the iron jaws of the whole social evolution and cannot make such a radical change by one sudden brain storm. But we must soon recognize that the care of children's mouths constitutes one of the foundations of health.

Our statistics show that the mortality of young children is greater than that of people of 70 years of age, and prove to us that the greater danger is in childhood. We know that almost all children have diseased teeth and have in their mouths bacteria of

*Read before the St. Paul Dental Society.

disease that may prevent normal development, and that the mouth may easily become the portal of entry for organisms that may infect the whole child. While it would require ten times the number of dentists that we have, we could control our children's mouths.

As a profession to accomplish something along these lines we must begin to discard some of our prejudices and superstitions. We should learn that the toothbrush is a most inefficient instrument to prevent caries, that we positively cannot control caries in a child's mouth with a toothbrush alone. We ought to recognize that we cannot fill children's teeth properly in most instances, and that a repaired tooth is usually a poor substitute for an unscarred tooth. We talk of conservation of pulps of teeth; we should know that we can best conserve the pulp by conserving the enamel.

The preventive care of little children's mouths so far as caries is concerned is so simple that we ought to all know it and practice it and teach it.

The use of copper cement in the fissures and of plaque destruction by means of ribbon floss and some abrasive powder between the deciduous molars is practically all we need to start with the care of the little child's teeth, provided we get them early enough.

This is where the difficulty comes in. In a recent examination of twenty-six children under five years of age to get material to demonstrate preventive methods there was not one child that had all of its molar contacts intact. As we carefully examine children's mouths we open up a new field and the condition is a great deal worse than we ever believed it to be. If at any time in life we could expect to find healthy conditions it would be in children three or four years old, but a very conservative statement would show active caries in over half of our children at four years of age.

As we stated earlier in the paper prevention of caries is simple and easy. It should consist of proper care by the dentist, consisting of protection of fissures with cement, plaque destruction and enamel polishing, carried out systematically and at proper intervals. This should be supplemented by proper home care, which should be weekly plaque destruction, using iodine staining solutions to develop and check up on the technic. First staining the plaques and destroying them with orange wood points and ribbon floss, assisting by XXX silex in the first few months and later by precipitated chalk. Following these methods we can positively prevent caries.

In the future consideration of the young child's mouth along with the consideration of caries are two other very important things, nose and throat conditions and development of the jaws.

In older patients after caries has wrought great damage and abnormal nose and throat conditions have advanced, and improper nutrition has become very marked, in other words when the child is not only off the track but a long way off the track, way out in the swamp in fact, it will take a long time to recover lost ground. This ground is lost while we stand idly by with blind eyes waiting for something to happen.

It is not any wonder that we as a profession cannot agree on the etiology of malocclusion, pyorrhea, etc., when we really do nothing but treat late after effects. Our primary and secondary causes are so mixed up that we do not know which is which, and many times which becomes which.

If, however, we begin to really look at these little people much will become evident. The nose and throat specialist should be our right hand man and along with him should work the orthodontist. The orthodontist should be able to diagnose his case at five years in many instances and if the occlusion is not normal to the age within reasonable limits he should start treatment, only this time he will become a real orthodontist; his function will not be merely moving teeth, he will assist nature to grow bone and let nature erupt teeth into a normal sized arch instead of waiting till it has become a confirmed deformity before interfering. If at five or six years, as in many cases, the evidence is all there, why wait?

In closing this paper I wish to thank the St. Paul Dental Society for the invitation to be their guest. I might explain that I fully realize many of the difficulties in the way of making any of the measures advocated at all effective for the common good. The field of the young child's mouth is tremendous alike in the necessity for intelligent help to these little victims and in opportunity for the dental profession to do real constructive work. Our knowledge of this field is very meager, but what little knowledge we do possess is not being put into practice by many dentists, even in the care of their own offspring. This last, however, may be the reason that dentists are notoriously neglectful of their own mouths.

However, it is becoming evident on all sides that there is a new day dawning for our children and that our profession will hold a very high place in it.

MAKING THE MOST OF THE CASTING PROCESS.*

BY CLARENCE O. SIMPSON, ST. LOUIS, MO.

The perfecting of casting to a degree of accuracy which made it applicable to the requirements of dental restoration removed certain limitations which had previously restricted operations on the teeth.

The advent of this method was hailed as a panacea of all the difficulties and most of the labor which had burdened our profession. The steps of the procedure were so simple, a two-candle-power intellect could grasp them, and any deficiency in skill, energy or judgment on the part of the operator was supposed to be supplied by the omnipotent properties of cement. The filling of teeth was to become an absorbing indoor sport and fear was manifested that dentists would mislay their marvelous artistic execution acquired by manipulation of gold foil. The value of a dexterity which was of no practical utility and not developed under the altered conditions of practice was not explained. If the advantages of such training can be demonstrated we might profitably reserve a period of each day for digital culture, when piano practice, sleight of hand tricks, art needlework or deaf-mute conversation could be indulged in, or more suitable finger exercises may be devised by our research laboratory men.

We now have the results of several years' experience and observation in the different uses of this method in practical service and while failures of various degrees have followed its use, the ratio is probably no greater than that of other operations under similar conditions by the same operators. Failures can so often be credited to faulty technique that attention may well be directed to it at this time.

There has been no little discussion by members of the profession and by the laity as to the comparative value of cast restorations.

The opinions of dentists range from the men who have discarded their pluggers and cast everything, to those who say they tried cataphoresis and porcelain, and refuse to bite again. Besides,

*Read before the St. Louis Dental Society, April 1, 1913.

they can put a *good* gold filling, while they are starting an inlay, and prefer to knock anyway, even gold.

This paper is not intended as a discussion of whether a poor gold inlay will preserve a tooth longer than a buck-shot, or a raspberry seed, nor to elicit any historic data of an isolated soft gold filling which has been in service since the year of the big wind.

Assuming that casting restorations is a recognized procedure in modern dentistry, and accepting no burden of proof as to its relative value, the object of the paper is to stimulate study of certain details of the work to the end of securing the best possible results from the use of the method.

To strive for maximum efficiency a definite standard should be fixed. In inlays this may be defined as cavity preparation offering adequate resistance and retentive form to maintain the inlay against the forces of mastication without aid of adhesives, surface outlines which protect susceptible areas and restore the normal form of the tooth, and an adaptation to the cavity margins sufficiently accurate as to leave no cement exposed on macroscopic examination.

This degree of perfection is possible where an inlay is indicated and any compromise jeopardizes the utility of the operation, the confidence of the patient and reflects on the ability of the operator and the prestige of the profession.

Casting has been employed in nearly all departments of dentistry, but from a consideration of the technique in inlay work, its greatest field of usefulness, application of the principles can be made to its other uses.

The detail of cavity preparation for inlays has been so beautifully described in the articles by Dr. J. V. Konzett that improvement is impossible, and a review of it alone would be a lengthy paper.

One feature, however, may be emphasized, cavity walls need not be greatly flared to permit removal of the model and *should* not be because the elasticity of the dentin tends to force the inlay from position after cementation. Cavity preparation for inlays differs but little from that for foil fillings except undercuts must be eliminated.

The wax should be shaped into the general form desired and even exaggerated in its bends while thoroughly soft before being forced into the cavity; when it is distorted or pressure is brought upon it after it is partially hardened there is a tendency for it to

return to its original form which often produces surprising results in the gold reproduction. In adapting wax to compound cavities force should be applied to all exposed surfaces simultaneously to prevent movement from the cavity at any point. This may be done by drawing an ivory matrix band held in a partially closed holder against the proximal surface as pressure is applied to the occlusal, and in mesio-disto-occlusal cavities a celluloid strip may be passed around the tooth and drawn tight as the finger is applied to the occlusal.

In M-O-D models a small staple formed from a clipping of plate gold, incorporated in the wax adds rigidity for handling.

In preparing the model, the ease in which wax can be trimmed compared with gold should always be in mind, and the approximate form desired should be attained. Exception may be made of proximal surfaces which must be freed from contact and the contour supplied by the addition of wax after removal. Care must be given to the carving of the anatomical features on the occlusal surface, the grooves and particularly the marginal ridges. Nothing is more disastrous to normal occlusion or more offensive to the trained eye than a filling or inlay presenting a flat occlusal surface inclined and rounded toward the interproximal space.

The correct occlusion can best be obtained by carving the irregularities of the surface following trial bites in which the opposing tooth is only brought into contact with the wax. The forcible closing of the opposing tooth into the wax especially in the later stage of the modeling is sure to distort it. The practice of removing the model from the cavity by melting the sprue wire into it is objectionable because of its unyielding attachment and interference in case of addition or trimming necessitating the return of the model to the cavity. The wax should be so manipulated that all enamel bevels are covered and a slight surplus beyond this point, for finishing and to neutralize any slight discrepancy of fit.

The wax can be thoroughly chilled by the application to its surface of a good sized pledget of cotton saturated with ice water. This method has advantages over rinsing or syringing which may produce a shock to other teeth and requires the expulsion of the water from the mouth, usually followed by complete or partial closing of the mouth and excursions of the tongue over the wax.

The final removal of the model should be accomplished by use of a delicate explorer inserted in an opening previously made for it.

The investing should be done as soon as possible after the model is completed, since some change in form will occur if the wax is left long at room temperature. After the sprue wire is inserted the cavity surface of the model should be hollowed as much as conditions permit, to reduce the quantity of metal to be inserted in the tooth, to increase the attachment of the cement and to minimize the molecular change in the metal at the time of casting since the total shrinkage is in direct ratio to the size.

This hollowing may be more safely done by investing the external surfaces and margins of the model leaving only the surfaces to be carved exposed, first allowing the investment to set, and after removing the desired amount of wax the investing completed.

When the investment has thoroughly set the heat should be slowly applied and never carried far above the temperature required to burn out all of the wax.

To secure uniform and accurate results only 24 carat gold should be used, except in cases where the bite is being raised and unusual stress is to be encountered and where inlays are used for bridge abutments and greater tensile strength is required. In these cases the gold may be alloyed with platinum.

Too harsh criticism cannot be made of the myopic economy in using all available scrap of the laboratory for inlays. The initial saving amounts to about twenty cents per pennyweight and this is more than discounted by the loss of time in finishing.

When the appearance of the finished inlay, the difficulty in burnishing margins and the faulty castings are considered, the evidence is overwhelmingly against using gold alloyed with silver, copper or zinc. The use of base metal for inlays which was in vogue at the onset of the casting era has properly fallen into disrepute, for the intrinsic value of the gold is a minor factor compared to the time and labor required in production.

After the inlay has been freed of all investment much of the preliminary finishing may be done in the absence of the patient, a saving of time for all concerned.

All irregularities of the casting must be removed and the inlay will seat better if most of the cavity surface is dressed with a small bur or stone. This work must be done with the aid of a magnifying glass which discloses much that may not be observed by the unaided eye. There is no more useful adjunct to operative work than the

frequent use of a magnifying lens in preparing cavity margins, examining affected surfaces, and particularly in determining the fit and leakage of fillings.

Any self-satisfied operator should get a correct valuation of himself by resorting to a magnifying glass in a critical examination of his faultless handicraft, keeping in mind that a microscopic opening is like welcome on the door mat for decay producing bacteria.

A man may have an eye for business but that eye needs a little artificial aid to keep the business if it is filling teeth. After trying all devices from a watchmaker's lens to a reading glass the appliance shown here, which may be adjusted to the face, leaving the hands free and focusing at a working distance, is a commendable improvement.

Great care should be used in forming the correct contour and contact point on the proximal surface, not forgetting it is contact point not contact surface. One advantage of an inlay over a filling lies in the perfect contour and polish which can be given to this surface outside the mouth, relieving patient and operator of separating, discing and stripping, a triumvirate of bugbears.

When the inlay is accurately adjusted to place the margins are finished taking advantage of the slight surplus to secure perfect adaptation and protection of cement and enamel.

This flange or surplus is one magnificent regulator, adjuster and shock absorber, of shrinkage, expansion, distortion and manipulative blunders, covering more faults than the most elastic charity ever beginning at home or abroad.

Often compound inlays are satisfactory in all features except the gingival margin. This fault can be entirely corrected by finishing the inlay ready for cementation, removing it, cleansing and drying the cavity. Then placing a small amount of thin cement or cavity varnish on the gingival wall, a suitable pellet of foil is flattened and adjusted to conform to the discrepancy and to extend beyond the margin. The inlay is placed in the cavity and malleted to position condensing the foil and removed. The cementation is then completed and the foil projecting over the gingival margin is better condensed by hand pressure and finished with a strip. This gives a filling as perfect as ever obtained with tin or non-cohesive gold, materials ranked as ideal for the purpose.

The efficiency of inlays is sometimes impaired in cementation.

Without enumerating the possible errors, the correct technique may be outlined, as first the cavity is sterilized with 10 per cent formalin and all foreign matter such as sand washed out. Then the cavity is dried with cotton *not* dehydrated with alcohol and warm air, since cement, however thin, placed on desiccated dentin sets too quickly for the operation, quite like the addition of plaster to a dry model.

A special prepared cement of fine grain should be mixed just to the degree of stiffness that it will flow freely. If mixed too stiff the excess cannot be expelled, if too thin crystalization is slow, shrinkage is great, the maximum strength and sealing qualities are not obtained, and the excess liquid is an active irritant to dentin and pulp. The walls of the cavity and the cavity surface of the inlay are coated with cement to prevent air being caught between the gold and cavity walls.

After the inlay has been seated with a rocking motion and malleting upon all parts it should be firmly held in place while the margins are burnished with a smooth flat instrument. The pressure not removed until crystalization is well under way as several forces such as compression of air or cement, elasticity of dentin, pressure of approximating teeth and the too vigorous use of eccentric stones are likely to displace it or interfere with the cement crystalization.

This concludes the mention of some points in the use of the casting process selected at random as probable obscure causes of failure. There are many others, in fact, the manufacture of a cast restoration is beset with pitfalls, and seemingly demands as much skill and more versatility than the manipulation of foil.

It is regretted that the topic is too broad to consider the relation of casting to dental fees, since the title may have conveyed the impression this was to be the trend of the paper.

However, the discussion usually touches upon everything except the contents of the paper, so this popular theme may later be featured to the satisfaction of those who seldom attend society meetings, because they never get anything of practical value from them.

PROCEEDINGS OF SOCIETIES.

CHICAGO DENTAL SOCIETY.

REPORT OF THE TESTIMONIAL BANQUET TO DR. T. W. BROPHY, FEB. 1, 1913.

(Continued from the May number.)

THE TOASTMASTER:

It gives me much pleasure to call upon Dr. Donald M. Gallie to introduce the next speaker.

DR. GALLIE:

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: In attempting to make a speech in presenting the next speaker, I feel somewhat like the Scotch gillie, who was asked by the Laird if he had made a speech at the presentation the night before, and he replied, "Nae Laird, I am no muckle at making speeches, I generally attend the Jollyfications, taking everything that is passed to me and go home speechless. [Laughter.]

It gives me very great pleasure to present the next speaker of the evening. On an occasion like this in Chicago, or in fact any where on this side of the imaginary line, it would not seem right did we not have with us some of our brothers from Canada whom the next speaker represents. As you know a few months ago this country loved and tried to win Miss Canada as the bride of reciprocity. She turned us down, but assured us she would be a sister to us, and we have with us this evening, brothers from all over Canada, from as far east as Nova Scotia, from the great empire of the Northwest, we have them from the old colony Quebec, and from the splendid thrifty Ontario.

The gentleman who will respond to the toast, "In Canada." fittingly represents our brothers there, he is a busy man, he is President of the Canadian Dental Association, and a member of the Dental Council of Canada. He is not only busy as a dentist, but he takes time to do other great things. He is an artist, organist, and chorister. It gives me much pleasure to introduce Dr. George F. Bush of Winnipeg, Manitoba. [Applause.]

DR. BUSH:

Mr. Toastmaster, Dr. Brophy, Dr. Gallie, Ladies and Gentle-

men: Just a year ago, when I was in London, England, I was walking in the evening twilight across London Bridge. The mighty waters of the Thames of that cold winter looked anything but an inviting place for a bath. [Laughter.] But there was one well dressed gentleman leaning over the parapet of the bridge and it looked as if he contemplated taking that bath. He attracted the attention of one policeman, who went up to him and said, "Look here, sir, I must ask you to move on. I cannot let you lean over in that way." The man said, "Oh, it's all right; let me alone a little while." The policeman went away. The man, well dressed, spoke nicely, but the policeman had not gone very far when the man began to lean over the bridge again. The policeman returned and said, "You must move on; you must not act like this." He satisfied the policeman with a shilling or something of that kind. His actions became so suspicious that I turned back to see what would happen. Presently another policeman came along and said to him, "I will call the patrol and run you in; you intend to commit suicide." "Oh, no," he said, "I had no intention of that: I just came here to give myself a hell of a scare." [Roars of laughter.]

Now, ladies and gentlemen, after the beautiful flow of oratory we have had tonight, I have no intention of making a speech. I came here, as Dr. Gallie has said, from across an imaginary line, and I have come to bring a message of greeting to Dr. Brophy from my good friends in the city of Winnipeg. We have heard from the East from Dr. Walker; we have heard from the city of Chicago and from sunny France, and now I come from the Northland to bear testimony to the esteem in which the learned gentleman, Dr. Brophy, is held.

When Dr. Gallie spoke of your trying to wed Miss Canada I thought of how I would like to tell you something of what we are doing in Canada, but I will not weary you tonight. Time is passing on, and we good religious people do not want to break the Sabbath. But we have completed 100 years of peace between the Anglo-Saxon races, and while we may not have weddings in the shape of reciprocity, I look forward to the time when we shall not only have the Dominion Dental Council, and Interprovincial Registering Body, but an International Registering Body. [Applause.] I look forward to the near future when we will have a great Anglo-Saxon Alliance which will do more than any Anglo-Saxon race has yet done towards the development of the civilized world. [Applause.]

I brought a letter with me, and with your permission I will read it. This letter is from my friends in the far West, although we do not consider it the far West. It reads:

“Winnipeg, Manitoba, Jan. 29, 1913.

To the President and Members of the Chicago Dental Society:

“Gentlemen: The Members of the Winnipeg Dental Club extend a most hearty and cordial greeting to the members of the Chicago Dental Society, so many of whom are personally known and highly esteemed by us. While some of our members will have the pleasure of being with you in person upon this delightful occasion, you may rest assured that we are all with you in spirit. We find words quite inadequate to express our appreciation of the many years of work of our esteemed confrere, Dr. Truman W. Brophy, all of which have been given so liberally to humanity at large and to the dental profession in particular. We can only express our heartfelt wish that a kind Providence may long spare him for many years of usefulness.

(Signed) W. F. TAYLOR, President,
C. H. WALSH, Secretary.”

Some years ago I read a book entitled “The Real Man.” In it the statement was made that the real man was in the mind—a thought, a spirit. If that be true, may not all our friends of the Winnipeg Dental Club be with us tonight? The author of this book said that we may project ourselves anywhere, no matter how far we may be separated by land or sea. So these good men are with us tonight, but there is only one thing I feel sorry about, and that is these good fellows slipped into the banquet hall in that way without handing in their tickets at the door. [Laughter.]

After all that has been said about Dr. Brophy, it ill becomes me to try and say much more, and I shall confine my subsequent remarks to one or two reminiscences, and I think when I have finished you will find that in some parts of Canada, much as Dr. Brophy has been lauded here and rightly, and much as he is thought of here, and rightly, in some parts of Canada he is thought very much more of than any of you have dared to express. In the first place, I met Dr. Brophy a good many years ago. I was introduced to him at a meeting of the Illinois State Dental Society at Elgin, Illinois, and I was proud to say I was introduced by that gentleman of gentlemen

and scholar, Dr. C. N. Johnson. [Applause.] The first thing that struck me was Dr. Brophy's personality. It reminded me of the saying of a great writer, who said, "The comfort, oh, the comfort of meeting a person you feel safe with." I felt that Dr. Brophy was such a person that I could pour out anything I had to say, good and bad, and that firm and steady hand would pick out that which was worth remembering, and let the remainder go the rest of the way.

I shall only give one more personal incident, and I am going to tell it to you in as nearly the actual words of the poor fellow himself as I can, so that with this apology I trust none of you will be shocked. Some years ago a patient presented himself to my good friend, Dr. Mathison, who is known to you here. The case was one of bad ulcer. The man had been to two or three hospitals and was given up. Dr. Mathison advised the poor fellow to see Dr. Brophy. The man came down to see Dr. Brophy and that skillful surgeon operated on him, the operation being a complete success. The poor fellow got a new lease of life. After he left the city of Winnipeg he wrote Dr. Mathison a letter, thanking him for all he had done and finished the letter by saying, "To me Dr. Brophy was God Almighty, and Dr. Mathison was Jesus Christ." [Laughter and applause.]

THE TOASTMASTER:

I will call upon another member of the Banquet Committee, Dr. J. P. Buckley, to introduce the next speaker.

DR. BUCKLEY:

Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: This has been a delightful evening. We listened to the resourceful and reminiscent Johnson; we were charmed by the personality and the eloquence of Darby; we were pleased by the grace and the earnestness of Jenkins; we were glad to hear the witty, the wise, the scholarly Evans, a true friend of the dentist, and as we listened we were filled with rapture and pride by the fruitful Bush from the great Canadian Northwest, but my friends, we are now to listen to a gentleman who combines the wit and wisdom, the earnestness and zeal, the courage and forcefulness, the personality and eloquence of all these various speakers. For a period of twenty years, from 1885 to 1905, this gentleman was the chaplain of the institution which was founded by our honored guest, and on one occasion I remember hear-

ing him express the wish that sometime he might have the letter S added to his degree of D. D. Those of us who have known him so well have always looked upon him as D. D. S., for we know him to be a doctor of divine science. If I were to express adequately my feelings as to the work, the life and character of this man, I would want to occupy this entire evening that you might know something of his character and his position in life. I will only refer to one thought which he impressed on one occasion upon the minds of the student body of the Chicago College of Dental Surgery. Speaking at the opening exercises he said: "Young gentlemen, you have gathered here from all corners of the earth. You have come from the various walks of life, from the workshop and from the farm. I am here tonight to tell you that I not only welcome you to this institution, but to wish you success in your new work. I am here to tell you that the doors of churches of this city are open to you, and so are the doors of hell, but young men, when you go to the devil in the city of Chicago, you do so with your eyes wide open, and because you deliberately will to do so."

My friends, the great influence which this man has had upon the student body of the Chicago College of Dental Surgery; the influence which he unconsciously has wielded with the young men of our profession with whom he came in contact has been for nobler deeds, for higher and better and purer thoughts. His influence has spurred us on to greater achievements, and the testimonial banquet to our dear friend Dr. Brophy would be incomplete without a toast from his friend, my friend, your friend.

I take great pleasure in introducing to you the Rev. William M. Lawrence, now connected with Colgate University, Hamilton, N. Y., but formerly and for a long time pastor of the Second Baptist Church of this city. Ladies and Gentlemen, Dr. Lawrence. [Applause.]

DR. LAWRENCE was very warmly received. He spoke as follows:

Mr. Toastmaster, Dr. Brophy, Dr. Buckley, Ladies and Gentlemen: I certainly would not be human if I did not express my appreciation of the cordial and complimentary introduction on the part of Dr. Buckley; complimentary, let me say, far beyond any conscious experience of dessert. It is an honor to be Dr. Brophy's friend, else you would not be here this evening. It is an honor to be

connected with any institution of learning. I know of nothing that can so thrill the heart with joy and so fill the life of man with pleasure as to have something to do, however slight it may be, in moulding the thoughts, the habits, the principles of those who are to come after us and do valiantly in this battle of life.

I am very glad indeed tonight to be here and witness this occasion. For over forty years I have been in public life, but I never have been at an occasion which seemed to me so profoundly significant, so intensely significant of the honor that is in man for man, and the timely sense of appreciation of this present gathering. I count it to be a rare privilege. I do not believe it is possible for any of us to see a duplication of this evening in the presence of these guests from all over the world, in these splendid cablegrams and telegraphic messages that have been read, some of them to which allusion has been made, and in the scholarly, modest bearing of the gentleman who is here this evening, who hardly believed, as he said a few moments ago, that it was all designed for him. The highest work of excellence in the world is that when you do a thing do it well, and yet not feel that you are seeking a compliment. I have been thinking of a story I used to tell the boys, one which Dr. Johnson and others have told many times after me. [Laughter.]

Some of you may have heard it, but I venture to repeat it. When I came to Chicago in 1880, it was a city of less than 500,000 people. It is now a city of 2,538,000. See what my coming did for Chicago. [Applause.] There used to stand over here on Madison street, not far from this hotel, a building devoted to the purposes of the Young Men's Christian Association. It was not particularly attractive architecturally. But there are few buildings whose memory is dearer to the Chicago people than that. Once in a while it was given over to lectures on temperance. We had periodical revivals of temperance interests in Chicago. You will observe I have qualified them as being periodical. On one occasion Francis Murphy was conducting the campaign, and I was asked to speak. He was a great orator—not tall but stocky, with great bushy eyebrows and broad, so that you would identify him with the governing bodies of the State of Illinois to which Dr. Evans so tenderly and pathetically referred this evening. [Laughter.] He started in to introduce me as the speaker of the occasion, and it took him three-quarters of an hour to do it, and when he was through I felt that if I was to

attain the level upon which he had given the introduction, I would need the longest ladder that was ever constructed. I accordingly suggested that a hymn be sung. A hymn will do a great many things. It will inspire or depress, and I was hoping it would depress in this instance. Right in the middle of the hymn a little girl came upon the platform holding in her hand two or three little flowers and handed them to Mr. Murphy. He looked at her, took the flowers in his hand, and suddenly turned to the audience and exclaimed, "Stop this singing!" and they stopped as though they had been hit individually, and then turning to me he said, "Dr. Lawrence, do you know, I would rather have a little girl come toddling upon the platform and hand me a bit of nosegay like that than to have a cart load of flowers dumped onto my coffin when I am dead and have the people say, "There, Murphy, smell of thim."

Dr. Brophy has been my friend for many, many years, and not only have we been associated together in educational work, but in the closest relations and intimacies of life. You see, my friend, Dr. Brophy, they are not waiting until you are dead to have wreaths cover your coffin, but they are bringing to you this night flowers with a fragrance rarer than that of the choicest roses; flowers that are eloquent in their beauty and are immortal in their nature. It is embarrassing for a man to see his characteristics displayed while he is living, because sometimes there may be lurking in his mind a faint suspicion that there are omissions deftly concealed and purposely withheld. I would like to say two or three words which I would say to Dr. Brophy in his home. I wanted to say this the other evening, and here you can co-operate with me. Dr. Johnson and myself were urging him not to allow a valuable manuscript that is yet to be published lie around the house so loosely that if an alarm of fire should be given, before the fire department could reach it, he, in his endeavor to save life, might neglect to save manuscript invaluable to the profession. [Applause.]

I would like to say, that there are two or three things that have impressed me. The first is, no man ever succeeds that has not within him the power of seeing things radiantly and invitingly. So to put it in common parlance, it is the power of vision. Who would have dreamed twenty years ago of such an evening as this? Who would have dreamed that in every country in the world that there should be representative American dentists? Who would have be-

lieved that the directions of the profession should have been given by a man living in an interior city within this great land? And yet one man saw it. One man saw the needs of the world; one man saw the necessity of elevating the profession so that it should not only reach the highest form, but that it should teem with life, abound in virtue and thrill the soul with its intrinsic excellence. It was because he had this vision of the power that should come to you gentlemen in alleviating suffering humanity, that the success of his life is crowned this evening by your presence and by these splendid testimonials. It is not only the man who has power of vision, but it is the man who has the power of interpreting life. Talk about the labyrinths which the fancied historian may wield or about Macauley who makes the pages glow with iridescent light, the man who takes the plainest man and looks down into his soul and sees within that soul the power and grace of excellence; the man who has the power of looking within the heart of man, who has a great spiritual insight, he is the man that moves the race; he is the man that points to the future and goes up to the poor soul who is trying to travel a hard, long and weary road. What is Dr. Brophy's service to the profession? The splendid building that stands there on Harrison street, with great masses of students that I have seen being graduated from time to time? No, no, no. These are great things, but it was a greater thing for Dr. Brophy to look into the eye of the boy from the farm, the lad from the workshop, the boy from the high school, and see within that boy the possibility that he could nurture, that he could elevate, that he could make firm of purpose. It was the power, gentlemen, which he had to look into yourselves and make men of you. That is the greatness of your friend. [Applause.] Not only was this power of vision an insight, it was the power of putting new force into life.

In one of the cities of the East, there was a poet-preacher, a man who, alongside of Beecher, broadened the view of humanity and saw in the voice of God not only a ruler who sent the world spinning like the boy a humming top, but who saw in the actions of men the power of a mighty spiritual impulse, and the greatest sermon oration ever delivered was delivered by Horace Bushnell, who spoke about the impulsive power of a great avocation. Put a noble motive into a man and you have conquered that man's destiny for him; put a noble purpose into the soul and you have changed

man from a brute and made of him an angel; put within the soul of man one great overruling noble intention, and you have filled the world with music. [Applause.]

As we are nearing the dawn of another Sabbath day, the peals of the bells, especially here in this city, emphasize this thought, that the man whom we honor tonight has been a man of vision, and a man of insight, and a man possessing that rare and Godlike property of putting into the human heart the purpose of making a man of himself. [Loud applause.]

THE TOASTMASTER:

The guest of the evening has been a little bit nervous because he thought he was to be called upon to make a speech right now. I want to acknowledge for the committee that we have practiced a little bit of deception upon our guest in preparing the program of the evening, because on the program which he has in his hands the page turned over is blank. Therefore, we are going to turn over the page now, and have a little more to do before we call upon him to make his speech of response.

It gives me great pleasure to announce that there has been voted in the office of Public Instruction of the French Government a decoration known as the Officer of Public Instruction, and that decoration was to have been presented here tonight by the French Consul for Chicago. Unfortunately, however, the decoration has not yet arrived, and the presentation must be made privately at a future date. However, it gives me exceeding pleasure to announce to the audience and to Dr. Brophy the fact that this great honor has been conferred upon him by the French Government. [Applause.]

Since the announcement that this testimonial banquet would be given, this committee has received letters and some other things from several different places, and among them there is a communication and something else from the members of the International Dental Federation, an organization in dentistry which is represented in its membership by men from practically every civilized nation on the globe. On behalf of this association I am going to call upon Dr. Herbert L. Wheeler, President of the First District Dental Society of New York, to make a presentation. [Applause.]

DR. WHEELER:

Mr. Toastmaster, Honored Guests and Fellow Colleagues: It

has been the fortune of America, youngest of nations, to have been the first to organize into a profession the art of dentistry, the youngest of the healing professions. This organization and development has not been attained without leaders of great ability, who with indefatigable energy, perseverance, unusual originality and through much self-sacrifice have made us what we are as a profession. We are here tonight to do honor to one who has an unusual blending of these many virtues in his make-up; a real genius, who has made a name and fame for himself and his profession at home and abroad. Tonight members of our profession are gathered from the four corners of the earth to pay him tribute of love and appreciation. This distinguished citizen of Chicago is not only esteemed and appreciated for his professional ability, but also for his geniality and lovable personal qualities.

I have the honor to have been commissioned by your local committee to present to him this roll and parchment from his distinguished co-workers of Europe, who constitute the Federation Dentaire Internationale, as a mark of their respect and esteem, which has been sent as a memorial for this occasion. It reads as follows: "When honor is done to Dr. Truman William Brophy, it is fitting that the International Dental Federation should participate and testify to the high esteem and affection felt by its members for their vice-president. We, the honorary president and president, therefore, on behalf of the federation present this address of congratulation as an expression of international amity, of admiration for Dr. Brophy as a great teacher and beloved colleague and a master surgeon. We wish him long years of health and happiness, illumined by many contributions to the science and art to which his life work has been devoted." Signed by the I. D. F.

The Federation Dentaire Internationale, in order to show their love and affection by further gifts, have seen fit also to send this beautiful example of Sheffield plate of the time of King George III, about 1770 A. D., older than our nation. It is emblazoned by an unknown crest. Its rim is solid, of exquisite design, forged by hand, emblematical of the solid worth of the recipient and of his wonderful handicraft. Like our friend, Dr. Brophy, it bears the marks of long use and has that ripe and mellow quality which makes our friend so beloved by his European confreres, especially because of his genial personality and traits of good fellowship. This is

sent as a token of their affection, as having the characteristics of our friend's attractive personality. [Applause.]

THE TOASTMASTER:

On behalf of the American Dental Society of Europe, I call upon Dr. N. S. Jenkins to make a presentation.

DR. JENKINS:

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: There is a body of American dentists in Europe, not great in numbers as you count numbers in Chicago, but of widespread influence, that have proudly kept alive the traditions of their heredity and their professional training in every country in Europe. Nearly all of them are members of the American Dental Society of Europe, of which Society Dr. Brophy is an honorary member. In the name of this society I have the honor to present to Dr. Brophy a bronze replica of the life mask of the greatest citizen of Illinois—Abraham Lincoln. [Applause.] This mask by Mr. Leonard W. Volk was made in Chicago in 1860, shortly before Mr. Lincoln's nomination for the presidency of the United States. It has been considered especially appropriate to offer this souvenir to Dr. Brophy, since through its fidelity to nature we see in this bust the qualities of mind and soul which have made both Lincoln and Brophy, each in his own sphere, splendid examples of the strength, the patience and tenderness which has made our beloved America so great. [Applause.]

THE TOASTMASTER:

On behalf of the Italian Stomatological Federation, I will call upon Dr. Piperno of Rome.

DR. ARRIGO PIPERNO:

Mr. Toastmaster, and Dr. Brophy: I am presenting to you, Dr. Brophy, as official delegate of the Italian Stomatological Federation, of which I have the honor of being vice-president, an illuminated address on parchment in Latin, with an appropriate resolution adopted by the Society, and which will be printed in our official Italian journal on Stomatology. In the second place, I am presenting to you another illuminated parchment address by graduates of the Chicago College of Dental Surgery, all of whom are practicing in Rome. We hope you will accept this as a remembrance of our devotion to you as a teacher. In the third place, I am presenting to you from myself a gift which is not in bronze, nor in

silver, nor in gold, nor in parchment, but a monograph I have written on "Fractures of the Maxillary Bone and Their Treatment." I have dedicated this book to you as my teacher in oral surgery in Chicago. No matter how adverse the criticism of my work may be; no matter about its scientific value, the fact of its dedication to you will show my affection towards you as a teacher, and if it should be thought well of by you, I shall feel that I have been highly repaid. [Applause.]

The following are the resolutions referred to by Dr. Piperno:

WHEREAS, Dr. Truman W. Brophy, has greatly contributed to the progress of Stomatology, and

WHEREAS, The dental world is rightly paying to the renowned man as a well deserved tribute of gratefulness for his devotion and abnegation to the profession during an already long career; therefore, be it

RESOLVED, That we, members of the Italian Federation of Stomatology, conform ourselves to the wishes of all the members of this body, in offering to Dr. Truman W. Brophy an illuminated address on parchment as a souvenir of the esteem and affection we have for him; and be it further

RESOLVED, That a copy of these resolutions be inscribed upon the minutes of this society, and that a copy thereof be sent to our official Italian dental journal for publication.

THE TOASTMASTER:

I will ask Dr. E. M. S. Fernandez, of Chicago, to speak for the Spanish Odontological Society.

DR. FERNANDEZ:

Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: Professor Truman W. Brophy—Sir, you are well aware of the great regard and high esteem we hold for you in this country for the skill you possess and the advance you have made in the practice of oral surgery. It gives me pleasure to have the honor of presenting to you the enclosed message from the dental societies of Spain jointly; also expressing their appreciation and gratitude for the aid and advancement which you have extended to them as well as the profession at large in your great achievements in oral surgery. [Applause.]

THE TOASTMASTER:

On behalf of the Dental Surgeons Association of Denmark, I

will call upon Dr. A. T. Rasmussen, of La Crosse, Wis., to say a few words.

DR. RASMUSSEN :

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: In the northern part of Europe is a country so small that many of you do not know where it is, I dare say. I would not know myself very much about it had I not inherited a name with *EN* on the end of it. I have been commissioned, Dr. Brophy, on behalf of the Dental Association of Denmark, to present you with the following resolutions :

"Owing to your weighty contributions to dental science during the expired series of years, as well as in the capacity of a renowned scientist, having made new fields subject to our domain, as in the capacity of a highly experienced instructor, having laid down conditions of germination for fertility in the hearts of the young students, we feel impelled to present our most cordial expressions of thanks in consequence of your jubilee.

"We take pride in our renowned honorary member, and to this feeling we are united in our hopes that Dr. Brophy, for many years to come, may be granted the faculty of continuing a productive work as a cultivator of science and therewith adding new proficiency to our calling."

THE TOASTMASTER :

For the National Society of Austrian Dentists we had selected Dr. Carl Beck, an Austrian, to make the presentation, but unfortunately he cannot be with us, and in his place I will ask Dr. M. L. Rhein, of New York, to make this presentation.

DR. RHEIN :

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: It is an unexpected pleasure that is afforded me to be able to take this slight active part on this historical occasion. Personally, from my own visit in Austria and my acquaintance with some of the most prominent men in our specialty in that country, I am aware of the fact that in no part of the world is your reputation and your character more highly esteemed than in that country, and it affords me the greatest pleasure to be able to give you this token of their esteem. [Applause.]

THE TOASTMASTER :

On behalf of the Norwegian Dental Association, I will ask Dr. Charles S. Omsberg, of Chicago, to say a few words.

DR. OMSBERG :

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: On behalf of the Norwegian Dental Association, I have been commissioned to present to you this message of congratulation:

"We, members of the Norwegian Dental Association, desire hereby to offer our warmest congratulations of appreciation and good will to you on the occasion of the banquet given in your honor by your compatriots and colleagues.

"We think of the valuable contributions you have made to the science of dentistry; the amount of alleviation given to human suffering through your devoted and successful labors is incalculable, and it is our earnest desire, Dr. Brophy, that you, who have brought such blessings to others, may yourself long enjoy the health and happiness that comes from the consciousness of good work well done.

Signed on behalf of the members of the Norwegian Dental Association: S. Glad, President; Birjer Andersen, Vice-President; B. Buhning Dehli, Secretary, and Blumenthal Peterson, Treasurer."

THE TOASTMASTER :

On behalf of the Belgium National Dental Federation, I will call upon Dr. G. M. J. J. Oury, of Liege.

DR. OURY :

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: I have been commissioned to give you this message of greetings from the Belgium National Dental Federation. I consider it a great honor to be entrusted with this mission, and join with all your friends in America to present to you compliments and congratulations of all medical men, as well as members of the Belgium Stomatological Society. [Applause.]

THE TOASTMASTER :

On behalf of our German colleagues, I will call upon Dr. Hugo Franz, of Chicago.

DR. FRANZ :

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: Ever since it was my good fortune to make the acquaintance of Dr. Brophy some twenty years ago, I know that he always found a warm spot in his heart for his German confreres. None of us had a better opportunity to watch what they were doing than Dr. Brophy has had in his frequent visits to the Fatherland. For two

generations the German dentists have looked to their American colleagues for initiative and advice, and our honored guest will tell you that he has always found them good pupils, apt scholars, and ever ready to give credit where such was due. On frequent occasions, they have not only acknowledged their indebtedness to American dentistry as a whole, but if they do not come to us in thought to join us at this festive board, it is the essential personality and the splendid merits of our honored guest which they want to acclaim with tokens of friendship and esteem. My dear Dr. Brophy, it is a source of personal gratification to have been asked this night to present to you this token from your young friends and confreres. As this token was produced by a sturdy German from across the seas, so its contents bring to you the best and honest wishes of your friends over the sea whose hearts you have won by many years of inspired and inspiring labor. I hand this portfolio to you in their stead, and with their best wishes for a long life of happiness and honor and contentment as a just reward. [Applause.]

THE TOASTMASTER:

It may seem, on account of the little time which we are devoting to this part of the program, as though we might be operating a steam roller, but I hope Dr. Brophy can stand it, and regret that the hour is so late that we must keep the machine going at rather high speed.

On behalf of our Netherlands colleagues, I will call upon Dr. Thomas P. Hinman of Atlanta, Georgia, to make the presentation.

DR. HINMAN:

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: It certainly gives me exquisite and unusual pleasure to be able to make this presentation. I want to relate one small incident that occurred in my association with Dr. Brophy. In the city of Memphis, Tenn., about ten years ago, Dr. Brophy was down for a clinic, to operate on cases of cleft palate. A boy was brought there from the wilds of Mississippi, who had a cleft palate. He had gotten enough money to come to Memphis. Dr. Brophy examined him carefully and expressed the belief that an operation for the relief of the cleft palate would be successful. It was found that the boy did not have money to stay in the hospital six or eight days. Dr. Brophy became acquainted with this fact and said it was all right. He

operated on the boy, called for the superintendent of the hospital, asked him what the charges for this boy would be for eight days, he mentioned the sum, and Dr. Brophy put his hand in his pocket and paid him the money. That is the kind of a man Dr. Brophy is. [Applause.] I could not help relating that little incident. It is one of the sweetest, one of the most beautiful things that has ever occurred in which I had the honor of knowing personally about it. Our honored guest has been my friend, and it gives me a wonderful pleasure and the greatest gratification to be able to present to Dr. Brophy from his colleagues in the Netherlands this testimonial. [Applause.]

THE TOASTMASTER:

On behalf of the American Dental Club of Paris, I will call upon Dr. R. Ottolengui, of New York, to say a few words.

DR. OTTOLENGUI:

Mr. Toastmaster, Dr. Brophy and Friends: I feel greatly honored to be on this wonderful program, and ever since I was told, on my arrival in Chicago, I had a place on the program, I have been wondering how I happened to be chosen to speak for the American Dental Club of Paris. I have been coming to Chicago so long I fear that the novelty of my visits has worn off, and now I am considered to be something of a parasite. [Laughter.] I was also notified by the gentleman who has so graciously mentioned the steam roller, prior to mentioning my name, that the speakers who were to make presentations were necessarily limited to two minutes; but I recall one of the other members of the committee reminded that gentleman of the difficulty of the task he had set him, because, as he said, you know Ottolengui lives by talk and he is self-supporting. [Laughter.] I am very glad to find some of the other gentlemen who have preceded me have not used up two minutes, so that possibly I have inherited one or two from them without encroaching upon those who follow me.

In speaking for my colleagues of the American Dental Club of Paris, I have the honor to present to Dr. Brophy this embossed token from them, which is not only an appreciation of their regard, but also a diploma of membership in the association, and before leaving Paris and coming back to America, as I intend to do before I sit down [laughter], I think it not impertinent to mention a fact which seems not to be known in this country. You observe in the program

that Dr. Brophy is credited with membership in the Odontological Society of France, but just how he obtained that membership has not been told, and while I am talking for France I will tell that. It seems that just prior to one of their great anniversary meetings a year prior a committee was appointed to select twenty men from the entire world to whom at their next annual meeting a diploma of membership in the society should be given. Ten of these diplomas went to single countries, as far east as Japan and as far south as South America; five were given in Europe and five were given in America. I think Chicago should be proud to have made mention that of the five that were given to America, three were given in the city of Chicago, one to our honored professor Black, and one to our esteemed guest, Dr. Brophy. (Applause.)

Coming back to America, in spite of the admonitions of the committee, I take advantage of the opportunity to extend a personal tribute to Dr. Brophy, not only as a confrere and as an American dentist, but in a sense as a competitor. I wish to carry you back to the time before Brophy did his great operation and to remind you that at that time I had the honor of being associated with Dr. Norman W. Kingsley. At that time it was a constant and regretful fact that we were seeing children brought into the office who had been mutilated by surgeons who had the M. D. degree. This was so often the case that it is not strange Kingsley became skeptical as to the success of surgery, and so when Brophy's operation was announced to be done upon infants, Kingsley said, "Wait until they grow up to talk. I doubt if they would ever come up to my test." Eight or nine years afterwards Brophy brought one of the children he had operated on early to one of the national meetings, and after the child had spoken from the platform, he did me the honor of saying, "If Ottolengui is present I would like to hear his opinion of this child." I stepped forward, and I said there is just one test I would like to apply, a test which Kingsley always applies to these children, because the test contained in it almost every sound which it is difficult for a cleft palate patient to pronounce. I would like to hear this child say "Norman W. Kingsley," and the child said it as well as any man could have said it. (Applause.)

Something has been said by the minister here tonight about the quality of vision. I wish you would permit me to give you a vision which I shall look forward to in the next century. I see some-

where in this neighborhood a beautiful park, with hill and dale and mountain streams, and at a higher point I see a higher hill surmounted by a beautiful monument. At the base in bas relief there is a child kneeling with hands up in supplication; at the top and in each corner an angel of mercy, with trumpet, extending to the four points of the compass. But strange to say, on this majestic shaft there is neither name nor date, but we find this inscription: "He made two children speak where only one could speak before," and without name or date, every man who stands there and looks at that monument sees Truman W. Brophy. Applause

THE TOASTMASTER: The next presentation of a personal tribute from Dr. Vincenzo Guerini of Naples was to have been made by Dr. B. Holly Smith of Baltimore, but in his absence I will ask Dr. A. W. Thornton of Toronto, Canada, to make the presentation.

DR. THORNTON, in behalf of Dr. Vincenzo Guerini, presented Dr. Brophy with a bust of Dr. Chapin A. Harris. (Applause.)

The Toastmaster introduced Dr. Watari Yamada of Chicago, who said:

Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: I am proud of the fact that I am able to be a student in the Chicago College of Dental Surgery, from which many able Japanese dentists have gone out as efficient executors in their profession. I am particularly glad to mention the name of Dr. Sato of Tokio, who was once a student in this college, and who was my honored teacher in Japan. I am sure that Dr. Brophy is rendering a great service to the empire of the East by sending out men like Dr. Sato, who are fully equipped in their professional training. Allow me on this occasion to express my hearty greetings to Dr. Brophy, who, in the capacity of the dean of the college, has been the foremost factor in advancing the training of the dental profession in Japan, and I hope that I too may follow the footsteps of my teacher and friend, Dr. Truman W. Brophy.

I feel greatly honored to act for Dr. Sato in being asked to speak a word of greeting on this important occasion and to present his new work entitled "Text Book of Dentistry," which the author thinks he owes to Dr. Brophy. I thank you. (Applause.)

THE TOASTMASTER: The next presentation, which is not on the program, is one from the Odontological Society of Paris by Dr. William Jarvie of Montclair, N. J.

DR. JARVIE: Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: My friend, Dr. Brophy, you have heard tonight from all over the world. It is not astonishing to see the range of your friends, for they are everywhere, and among others I have in my hand a series of resolutions from the members of the Odontological Society of Paris, which it gives me great pleasure to present to you. (Applause.)

THE TOASTMASTER: From some of Dr. Brophy's friends in New York, by Dr. W. W. Walker, New York City.

DR. WALKER: Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: I have been allowed three minutes, but I am going to devote half a minute in complimenting the Executive Committee for the great and beautiful and magnificent work they have done in arranging the clinic, and for this magnificent banquet here tonight. I have attended many dental banquets, but never in my life have I attended one that has been so large in numbers and so enthusiastic as this, and I hope the committee that has charge of the work will not do by Dr. Brophy as a similar committee did in New York to the president of the recent surgical congress that was recently held there. After the banquet was over, that gentleman went down stairs, and down there he met a few of his friends. He could not help being social when they had honored him a little while ago. He stayed there, finally he looked at his watch and it was 4:30 A. M. He was scared to death almost. He took a cab, went home, put his hat on the rack, as he thought (laughter), walked into the library, picked up a book that had not been opened for two or three years, and began to read, as he thought. Presently footsteps were heard coming down the stairway, and she went back into the library and said, "George, are you ill?" He replied, "No, dear, I am not; I am a little nervous; I came home a little earlier tonight than usual (laughter), and I picked up this book and began to read it. Go up stairs, little girl, and I will be there in a moment. I am finishing this chapter." She looked at him and said, "George Emerson, you go up stairs and put the checker board back on the table where it belongs." (Laughter.)

My dear Dr. Brophy, I could speak all night about the beautiful things you have accomplished in life, but I have not the time, but am simply going to endorse everything that has been said, and especially by my friend the minister from Hamilton, who spoke

so beautifully of your accomplishments. I have a message of love from the members of the First District Dental Society. There are two colleges in our city, the College of Dental and Oral Surgery, and also the New York College of Dentistry. These plates that are in this casket were made for you, and they are not to be used simply as holiday plates, they are not to be used simply on the Fourth of July or on Thanksgiving Day, but they are to be used every day by you. In partaking from them as you will, you will occasionally see the names of those in New York City that are dear to you and honor you, and as I see by the printed list that you moved to a farm in 1855, when the time shall arrive for you to cast aside the dental instruments you have been toiling with for so many years and get through with your college work and with your oral surgery, may you return to a farm and take that beautiful joyous, lovely rest that you have so well earned and so justly deserve. I thank you. (Applause.)

THE TOASTMASTER: On behalf of the W. D. Miller Dental Club of Berlin, I am going to call on Dr. N. S. Hoff of Ann Arbor, Mich., to present some resolutions.

DR. HOFF: Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: Dr. Brophy, it gives me great pleasure and honor to present this testimonial of esteem and personal regard from the W. D. Miller Dental Club of Berlin. I know you will receive it with pleasure and gratification because of your long personal relation with the man who has been your personal friend, and a man whom you so long have admired.

"We, the president and members of the W. D. Miller Dental Club of Berlin, take this opportunity of conveying to Dr. Truman W. Brophy our sincere admiration and appreciation of his untiring energy and devotion to the dental profession and for the brilliant and original services he has rendered in the realm of oral surgery.

"We, and the profession in general, look with pride upon his life's work. He has not only been a pioneer, but the founder and leading spirit of one of the most important and influential institutions of learning in the west, whose graduates are honored in all parts of the world."

THE TOASTMASTER: From friends in many cities of the United States, Dr. J. R. Callahan, Cincinnati.

DR. CALLAHAN: Mr. Toastmaster, Dr. Brophy, Ladies and

Gentlemen: On the walls of the Congressional Library in Washington you may find these words: "As one lamp lighteth another, and grows no less; so nobleness increases nobleness." It seems to me that this sentiment is particularly appropriate of this occasion. For many years it has been known to us that Dr. Brophy has visited almost every city in this land to take part in various medical and dental gatherings to shed his professional light upon others, and it has grown no less—nay, with the flight of time it has grown greater. Dr. Brophy has treated professional work with serious, thoughtful and elevating nobleness; that nobleness that begets nobleness.

It is my privilege, Dr. Brophy, on behalf of representative practitioners living in sixteen different cities in this land, as a small token of their regard, to bring you our offering of eighteen plates on which are engraven the names of almost a hundred of your admirers, each one filled with the desire and hope that you may be spared many years to shed further light among your brethren and grow no less, and that your nobleness may continue to increase nobleness among our beloved profession. (Applause.) The names of the cities as I read them are: Kansas City, St. Louis, Indianapolis, Atlanta, Cleveland, Philadelphia, Cincinnati, Nashville, Louisville, Boston, Columbus, Detroit, Minneapolis, Cleveland, Toronto, Baltimore.

THE TOASTMASTER: On behalf of the Illinois State Board of Dental Examiners, I will call on Dr. T. A. Broadbent of Chicago.

DR. BROADBENT: Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: My dear Dr. Brophy, it affords me great pleasure on behalf of the Illinois State Board of Dental Examiners to make this presentation (a piece of silver). I had written a presentation speech which I expected to read, but as everything I had intended to say has been said over and over again, and so much better than I have said it, I shall confine my few personal remarks to you. As you know, four-fifths of the present Dental Board are your boys. They are graduates of your institution. Your life has been an inspiration to us. You started us in our professional work, and if we have accomplished anything in this world or have achieved any measure of success, it is due to your efforts and to your guidance. We deeply appreciate your endeavors in the field of dental surgery, and we wish to make this presentation, not for its intrinsic ~~worth or value~~, but for the love and friendship that go with it. May

you value it as the years go by, and may it be a constant reminder of this occasion to you and of the love and esteem the Dental Board has for you. (Applause.)

THE TOASTMASTER: I take great pleasure in introducing Dr. C. R. E. Koch of Chicago, who will speak for the Chicago Dental Society.

DR. KOCH: Mr. Toastmaster, Ladies and Gentlemen, and Dr. Brophy: It is said that "language is silver and silence golden." If I was speaking for myself, I should take unto myself the privilege of giving you golden silence, a look in the face, and a clasp of the hand, and I believe that speech would be fully understood. I am speaking, however, in a representative capacity, and feel that it is incumbent upon me to say something, although I am not gifted with the silver tongue of oratory. A great deal I had intended to say has been spoken so much better than I could have possibly uttered it. But I do wish to call attention, Mr. Toastmaster, to one thought that perhaps has not occurred to you, namely, it is generally conceded that a prophet is never without honor save in his own home. We have disproven this maxim here, and I think everybody will concede it has been disproven. Dr. Brophy is a prophet among the men who know him best. (Applause.)

If I may digress just a little, I will recall a little incident to you that happened some time ago when Dr. Brophy was known as Captain Brophy. I have not seen that referred to anywhere. Dr. Brophy served four years in the military service of the State of Illinois and rendered excellent service as a surgeon to one of our regiments. The incident I refer to was a little dinner, and there were some viands served at that dinner that the commissary did not furnish. A chaplain was invited to participate in that dinner, and I think he had some inkling that all of that dinner had not been furnished through the regular sources. But he was asked to say grace, and he said: "For these things that we are about to receive, good Lord make us truly thankful, and let us ask no questions for conscience's sake, Amen." (Laughter.)

Dr. Brophy, this little gift (chest of flat silver pieces) is not of great intrinsic value, but it comes from your friends, and when you repair to your meals and take your cream and crackers I trust you will keep these utensils before you, and when from the polished surface you see a reflection there, I am quite sure they will be the friends who wish to be remembered by you. (Applause.)

THE TOASTMASTER: On behalf of the Odontological Society of Chicago it gives me great pleasure to introduce to you Dr. Calvin S. Case.

DR. CASE: Mr. Toastmaster, Ladies and Gentlemen, my dear Dr. Brophy: It gives me one of the greatest pleasures of my life to present to you an expression of the Odontological Society of Chicago in the following resolution:

WHEREAS, In the vicissitudes and activities of life there occasionally arise opportunities to pay tribute to those of our living comrades who have won great prominence and distinction by their individual efforts, and whose lives have been such that we can honor and respect them; and

WHEREAS, The one who has been chosen on this occasion to most fittingly receive this tribute of his fellow confreres at home and from abroad, the first honor among his many distinctions of having been one of the founders of the Odontological Society of Chicago, whose interests and advancement he has always faithfully nurtured with a regard akin to home and family; therefore, we the members of that little family are more than anxious to express our extreme pleasure and approbation at this just tribute to our comrade and friend. In furtherance of this occasion, we in regular session on Tuesday, January 7, 1913, passed resolutions expressive of our affection and esteem, and now take great pride and pleasure in presenting this loving cup filled to the brim and overflowing with our love and highest regard and our good wishes to this, our distinguished brother and friend, Dr. Truman W. Brophy. (Applause.)

THE TOASTMASTER: On behalf of the Alumni of the Chicago College of Dental Surgery, Dr. L. S. Tenney, Chicago.

DR. TENNEY: Mr. Toastmaster, Ladies and Gentlemen, and Dr. Brophy: As I look upon this great array of almost priceless art and realize that Dr. Brophy lives in the city of Chicago, it seems to me that the next most appropriate thing we could give him here would be a pair of 44 caliber six shooters. (Laughter.) I do not believe it would be wise for him to go out into the night without being thus protected, and after he receives what I am going to present him I am sure he would not care to do so.

While I realize the hour is very late, I feel that the importance of the organization I have the honor to represent entitles me to just

a few moments more of your time than has been taken by some of the gentlemen who have presented these magnificent gifts. I am aware that in the history of the dental profession there have been occasions similar in character to this one, and yet it seems to me that in some respects this event tonight is almost unique. The coming together of this great number of dentists from every section of our city and state and states beyond; the presence here of these men of other professions and men of world-wide reputation; this gathering in such numbers of the representatives of all these organizations and localities is in itself a rather unusual event. But further than this, I am reminded that we are not here for the purpose of commemorating the deeds of one whose career has ended, but we are here rather for the purpose of paying our respects, of offering our tributes and doing honor to a man who is still at the zenith of his power and at the very height of his usefulness. At a time when he is still actively engaged in the duties of the profession to which he has devoted a long and useful life, we pause to congratulate him upon that which he has already accomplished, and while this is not entirely an unheard of event, it is nevertheless one we witness altogether too infrequently in a day when the most of our eulogies are to be found printed on the obituary pages of our journals. I speak, briefly, for the Alumni of the Chicago College of Dental Surgery, and in doing so I believe I touch upon a subject that is nearest the heart of Dr. Brophy; for whatever other interests he has had in life, and they have been many and varied, I believe that around this institution and its work there clusters the most cherished recollections of his professional career. It would be unnecessary for me to go into any part of the history of this institution. After little more than a quarter of a century it has become one of the leading institutions in the world for the teaching of the student dentistry, and today it stands out there in that great circle of education, of science and learning as a lasting and enduring monument to whatever energy, ability, faith and determination can accomplish. It would be going beyond the truth to say that this institution stands there as a monument to any one man, for in it I can see crystallized the efforts of hundreds of faithful workers, and yet I know, and you know, that that college has had its trials and vicissitudes. And again we know that in times of greatest distress, when the clouds were darkest and thickest, it was Dr. Brophy, and **he**

alone, who never wavered, and but for his indomitable energy and his untiring faith I doubt if that college would stand there today. (Applause.) And so, Dr. Brophy, I have the honor to represent tonight the Alumni of an institution that, I believe, has been your greatest pride and chief object of your ambition. From every section of the country, from every state in the Union, from every important community throughout the whole land, I bring you words of heartiest congratulations, and if you will place your ear to the ground and listen I have no doubt you will hear come floating from beyond the sea and from every clime those same words of affection that I bring you tonight, and from every part of your own native land. And it is not from members of the profession alone that I bring you tidings, but from thousands and tens of thousands of the laity, who today are receiving better service and more skillful professional attention because of your efforts to build up an institution the students of which might receive all the latest and best and most approved that science could offer. (Applause.) I can imagine with what feeling of pride you will look back upon your work and see its results; I can imagine with what satisfaction you review your life and observe what you have accomplished. Surely, such work as this cannot perish with you, but this profession and those we serve must continue to profit by your genius long after you have passed away. But, Doctor, at such a time as this words at best would feebly convey our sentiments. Surely such poor words as I am able to speak can make no lasting impression. Merely let me assure you that what little I have said comes not from the lips alone but from the heart as well. This profession you have rendered the most distinguished services. This college, of which we are graduates, you have placed upon a lasting and secure foundation. We have profited by your example. We have been enriched by your teaching, and now as a remembrance of this most happy event, I have the great honor, on behalf of the Alumni of the Chicago College of Dental Surgery, to present you this beautiful clock. (Applause.) I believe in time to come, as you recall the source from whence you received it, its ticking will be eloquent with the memories of the past. You will listen; perhaps in that hour when all is silent about you save for the ticking of this clock, you will listen to its grateful sound. And it will be music to your ears. And as you listen, while it records the passing moments, let it also

recall the love, the affection, the gratitude, and the esteem of those you have served so faithfully and so well. (Loud and prolonged applause.)

THE TOASTMASTER: On behalf of the faculty of the Chicago College of Dental Surgery, it gives me very great pleasure to introduce Dr. W. L. Copeland.

DR. COPELAND: Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: I am not going to make a speech, on account of the lateness of the hour. On behalf of the faculty of the Chicago College of Dental Surgery, I take great pleasure in presenting to you, Dr. Brophy, this silver tea service, with the wish that the tea from the teapot may stimulate your tired body to renewed action; that the sugar from the bowl may sweeten your existence, and that the cream of all good may pour freely into your life; also with the caution, don't mix your drinks. (Laughter.) This service which I have the pleasure of presenting to you, should be doubly esteemed by you from the fact that its donors are all dead; they passed in their checks several days ago. (Applause.)

THE TOASTMASTER: On behalf of the class of '87, I am going to call upon Dr. George West.

DR. WEST: Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: On behalf of the class of '87, who spent two fruitful years under your tutelage as pupils, I present you this rug, hoping that it may rest many years under your feet and as one of the remedies which Dr. Evans failed to mention for cold feet. (Applause.)

THE TOASTMASTER: On behalf of the members of the faculty of the Northwestern University Dental School, I take pleasure in calling on Dr. Thomas L. Gilmer.

DR. GILMER: Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: This is an unexpected pleasure to me, as I did not know that I was to be the presenter of this little token of the great esteem which the members of the faculty of the Northwestern University Dental School hold for you. We regard you as a great educator; we regard you with Garretson as the Father of Oral Surgery. We believe that you, although connected with another school, are equally interested in our work, in ourselves, in helping us to be greater and better dentists. We hope that when you read the names on this little piece of silver, you will know that we are

your genuine, true friends, and true friends of your school. (Applause.)

THE TOASTMASTER: On behalf of the Dental Manufacturers of America, I take great pleasure in calling upon Senator A. C. Clark.

SENATOR CLARK: Mr. Toastmaster, Dr. Brophy, Ladies and Gentlemen: The Dental Manufacturers of America are very grateful to your committee for permitting us to trespass upon this occasion, in order that we may show our honor to the guest of this evening. As we have attended many conventions in all parts of the world, we have been fortunate in listening to the wisdom and the instructions and inspiration of many members of the profession. The speeches we have heard tonight have inspired us, and if we only had the words at our command and the voice, after listening to the speeches this evening, we would further throw our energy and life into this occasion by uttering further words of praise to Dr. Brophy. At this international gathering of professional men I will close my remarks as follows:

"Almost all peace, and almost all pleasure is made with a friend or two,

And almost all troubles may be released with a friend or two.
But in the grasp of the clasping hand, whether on soil or native land,
The world is made, you understand, of a friend or two."

(Applause.)

THE TOASTMASTER: In behalf of the committee in charge of the banquet, I will ask Dr. G. W. Dittmar of Chicago to say a few words.

DR. DITTMAR: Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: I regret that there is so little time at my disposal, for I would like to fittingly express, in behalf of the banquet committee, the appreciation, respect, esteem and love that we hold for you, Dr. Brophy.

However, I feel that the scene before you, the splendid personnel at this great banquet; representatives from every part of the civilized world; the spirit of goodfellowship and liberality here manifest speaks far more eloquently than can I.

Our effort has been beautifully rewarded with hearty responses and unselfish co-operation—all for you.

In addition to this elegant tray of gifts, kindly accept, with

our sincerest well wishes, this little token. (Applause.) Here Dr. Dittmar presented Dr. Brophy with a silver cake stand.

THE TOASTMASTER: On behalf of the Chicago Dental Society, a guest book will be presented by Dr. W. V-B. Ames, which will contain, in addition to the names of all those who are present, which have been written in tonight, copies of all of the various announcements, invitations, circulars, and everything else which have been sent out in connection with the preparation of this event. It now gives me very great pleasure to call on Dr. Ames.

DR. AMES: Mr. Toastmaster, Honored Guest, Ladies and Gentlemen: It is satisfactory and pleasurable to me to have been chosen to present to Dr. Brophy this book in which we have all had the opportunity to subscribe our names, and I want to say for each and every one of us that it gives us great satisfaction to go on record in this way as being remembered on this most pleasant occasion. (Applause.)

THE TOASTMASTER: Now, Dr. Brophy, I take great pleasure in turning one page backward and ask you to say a word of response. Gentlemen, our guest, Dr. Brophy. (Applause.)

Dr. Brophy was very warmly received. He said: Mr. President, Mr. Toastmaster, Ladies and Gentlemen: I have confronted many difficult tasks in my life, but I think you will believe me when I say that I hardly feel equal to the occasion this evening. I am overwhelmed with these expressions of friendship, these expressions of good fellowship, and these expressions of love. Prior to the beginning of this banquet I had something to say, but what I thought I would say has vanished. I appreciate more than I have words to express the honor you have conferred upon me tonight. As I look back through the years I have tried to discover what influence made this occasion possible, as to why you come here to honor me. I thought of my early experience in the profession, and as I have given that thought the days of my early manhood were reviewed and the influences that were operating to aid me in my beginning. I went back to my college days. I remarked to a friend early in the evening that I could not have lived in any period that suited me so well as the one that has been assigned me. It was my privilege to have been a student of the great "Father of American Surgery," Dr. S. D. Gross. I had the opportunity to hear him lecture and attend his clinics. I listened to the teaching

of Joseph Pancoast; I listened to the teachings of D. Hayes Agnew; I listened to the teachings of Louis Sayre of New York, the great orthopedic surgeon, and then coming back to Chicago I listened to the teachings of Moses Gunn, the leading surgeon of the west at that time, and then his immediate successor, Dr. Charles T. Parkes. I was a student of the great father of oral surgery, Dr. James E. Garretson. He was my friend. His presence was indeed an inspiration. His kindness to me, his painstaking advice, his loving personality so helped me, that I took courage and endeavored to do my best. Later it was my great privilege to have been a contemporary of that genius whose record stands so brilliantly before the entire world; a man whose versatility and marvelous achievements placed him foremost among the surgeons of his time. For his steadfast friendship, his good advice, and the invaluable information I obtained from him, I will always be grateful. I refer to no other than the immortal Senn, whose record grows brighter as the years pass by. By these men in the field of surgery I was materially assisted. When I think of the teachers in the school of dentistry that I had the opportunity of attending, among whom was that great scholar, scientist, teacher, Dr. Elias Wildman; when I think of the great and lovable Dr. James Truman and Dr. Thomas L. Buckingham, and another teacher that I must not omit mentioning, that daring, energetic man, whose life was terminated too soon, Dr. George T. Barker, and of another whose life has been spared, and whose influence in the field of medicine has been so broad and so elevating, Dr. James Tyson, I am deeply impressed with the great value of their work in leading young men and teaching them how to become successful practitioners. I recall another teacher who is still living, Dr. James Ewing Mears, whose valuable assistance was always cheerfully given me. I have always regarded it as a great misfortune that I had not the privilege in my college days in Philadelphia to have enjoyed the loving, kindly influence of Dr. Darby, whose eloquent address you have listened to this evening. My teacher in his department was his student, and I have always thought how much better it would have been for me had the master been at my side.

It is hard for me to account for all this tonight. When I received a letter from Dr. Arthur D. Black, while I was very ill in Pasadena, California, last winter, about a year ago, informing

me that this society had unanimously decided to tender me a testimonial banquet, I was at a loss to know why, and as I thought it over I concluded that it was probably for the purpose of giving me more encouragement in my work. I believe that this society, the president and the officers have pretty generally observed that I have been gradually entering into the period of my greatest usefulness, that during the last three or four years I am really getting more deeply interested and making better progress in my profession, so they wanted to encourage me to keep it up (Applause.) Anyway, I am unable to find words to express my appreciation of this testimonial, of the communications and tributes coming as they have from all parts of the world. Whatever I may have done in assisting in the work of the profession in the field of dentistry, in the field of oral surgery, and in the field of education has been through the help that I have received from the men whose names I have mentioned and from others who are honoring me tonight. I would not do justice to my feelings if I were not to say that the lives of Atkinson and Dwinelle and Perry of blessed memory, of Louis Jack, of Bonwill, of William H. Morgan, of Jonathan Taft, of Allport, and Cushing and Dean and Harlan and Barrett and many others who have passed away, have helped me. Before me stands a man who has been greatly honored. Having been declared by the authorized representatives of all the nations first in his achievements in dental science, art and literature. A man with whom I sat up nights more than thirty years ago—a living interrogation point, drawing from him and from his great store of knowledge such information as I felt I needed. I owe him a great debt, more than I can ever pay. I cannot say too much about his ability and his helpfulness. You all know who I mean. I mean the great Nestor, the Dean of the dental profession, the world's peerless living dentist, Dr. G. V. Black. (Loud applause.) I repeat, whatever I have accomplished in my professional life in the work to which you have so generously and enthusiastically given expressions of approval, I am largely indebted to my teachers and confreres in my professional association work at home and abroad.

What has been presented here this evening has in it to me another meaning. It seems to me an expression of friendship and love, and that touches me deeply. I would not be just to myself and to my feelings were I not to say that had it not been for the

friendship of the son of the distinguished man whom I have named, Dr. Arthur D. Black, the chairman of the Executive Committee (applause) and his co-laborers on that committee, and the prompt enthusiastic response of men from all parts of the world to the notice sent out that this testimonial was to be, we would not be here tonight. I appreciate more than I have words to express the love that is represented in what has occurred this evening and the honors, the greatest of my life, that you have bestowed upon me. I feel, Mr. President, Mr. Toastmaster, Ladies and Gentlemen, that I cannot say more. From the depths of my heart I thank you. (Loud and prolonged applause.)

MRS. ISABELLA BARR.

Died at Tacoma, Wash., May 17, 1913, Mrs. Isabella Barr, mother of Mr. Wm. Findlay and Thomas G. Barr. Cause of death was heart failure. Mr. Findlay was for many years connected with the Chicago branch of H. D. Justi & Son, and the DENTAL REVIEW extends its sympathy to him at this time.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL

THE SIXTH INTERNATIONAL DENTAL CONGRESS.

This congress is to be held in London, England, August 3 to 8, 1914, and it is none too soon for the dentists of America to begin to prepare for the great event. On another page of this issue of the DENTAL REVIEW will be found a preliminary notice containing general information regarding the organization of the congress, and announcing the fact that His Majesty, King George V, has graciously consented to act as Patron of the Congress. The officers have been chosen and their personnel bespeak for the event a most auspicious promise of success. It remains now for the profession in this country to awaken to the importance of the coming meeting and to support in every way the undertaking of their British confreres. That the congress will be conducted along the highest and best traditional lines goes without saying. There is a poise and dignity to everything British which fits perfectly into the scheme of a large international congress, and it is safe to predict that when this meeting shall have ended, the profession all over the world will be richer in experience and scientific lore as the result.

The influence of these congresses in the past has been to bring closer together the members of the profession in different countries, and the benefit therefrom has been inestimable. There is always a

broadening of the mental horizon when the thought of the most progressive men of all nationalities is brought together in deliberation. It does away with the provincialism which is the inevitable result of isolation and which gives men only the point of view to be obtained from association with men of their own kind in their own country. We need the stimulation of contact with men of other climes in order to develop along symmetrical lines, and these international gatherings are of great value in this one respect if in no other.

The coming congress should receive the hearty support of every progressive dentist the world over to the end that it may result in the largest and most satisfactory meeting ever yet held.

CREDIT TO WHOM CREDIT IS DUE.

Ever since periodicals have been published, in fact ever since printing was invented, there has always been some complication over the question of credit when one periodical copies an article from another. In all of our large monthly magazines of general literature the contents are copyrighted and are thus protected by law from being published in other journals. In dental journals it is rare to copy-right an article, and thus most of the material published is free to be copied by other periodicals without infringement of rights. But there is one condition which by common courtesy and justice always governs such procedure, and that is for the periodical which copies an article from another to give credit to the one in which the article originally appeared. This custom is so ingrained in the usages of periodical publications that no one thinks of questioning its propriety or the obligation involved in it. In fact, it is almost looked upon as stealing when a journal ignores this obligation, and periodicals are known as pirates which habitually do it.

In dentistry there are some journals which fill their pages largely from the articles of other publications, and some of these are praiseworthy and influential journals of which no criticism can be made. But occasionally some of them fall into the careless habit of using articles from other sources without giving credit, and of late this evil has grown to unnecessary proportions. An editor will at times overlook a matter of this kind and use an article without credit unintentionally, but to make a practice of doing it is unquestionably

wrong and should be rebuked. It seems to require an occasional calling attention to this matter to remind certain editors of their duty, and we commend to the consideration of some of our esteemed contemporaries the discipline of looking back over their recent files and see how frequently they have erred in this respect.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the May issue.)

AUSTRALIA.

If you want to make a Melbourne man sniff the air disdainfully just mention to him confidentially that you think the Sydney harbor is quite a superior place, if you wish to see a Sydney man shrug his shoulders speak to him of the wide streets and up-to-date aspect of Melbourne, if you wish to turn both of them green with envy point out to them the wondrous hospitality and balmy climate of Brisbane. As a matter of fact, Sydney has the most wonderful harbor in the world, Melbourne is all she claims for herself, and Brisbane—well I shall speak more in detail later of Brisbane's hospitality, but in passing I must affirm that I have never yet seen anything approaching the big-heartedness of the people of that delightful place—unless it is in Sydney or Melbourne, or in New Zealand.

Nature has done the last possible thing for Sydney harbor, and I am tempted to go even beyond the average Sydney man's estimate of the wonders of the spot. The entrance is guarded by two prominent headlands called "The Heads," the most imposing looking sentinels I have ever seen, more than 200 feet high I am told, and the moment a ship is inside these heads no storm can affect it. Not content with mere utility nature has added beauty to the spot, surrounding it with bluffs and bays, and inlets, and every imaginable variety of water front. It is estimated that there is a coast line in Sydney harbor of 800 miles. I didn't measure it because I early learned in my experience with Australians to take everything they said for granted—it was much easier and more pleasant than to question it. And I am willing to believe anything about Sydney harbor. The only objection I have to it is the sharks—which are plentiful and pugnacious.

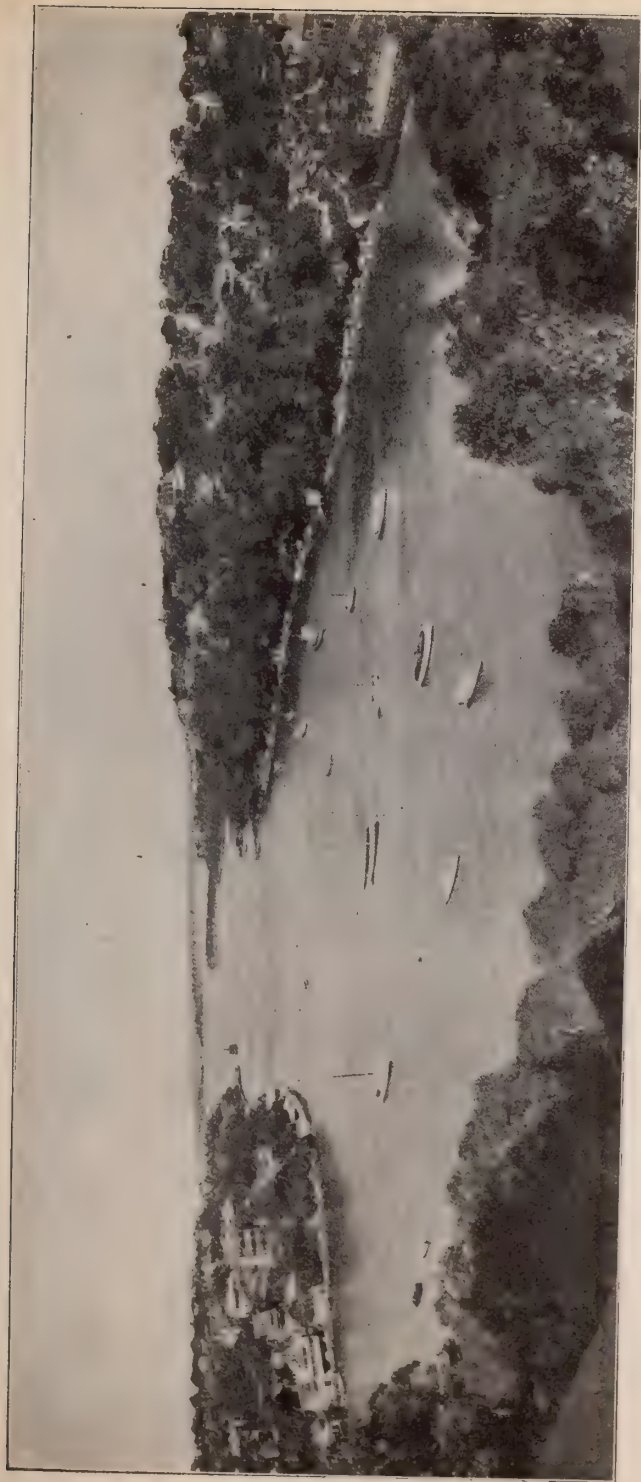


Circular Quay, Sydney, N. S. W. The center of shipping.

We arrived at the dock Saturday morning and I found waiting to welcome me Dr. H. C. Moxham, the New South Wales representative of the Third Australian Dental Congress which was to meet the following week at Brisbane, 725 miles from Sydney, in the State of Queensland, and also my old friend and former student, Dr. A. Dangar Burne, of Sydney, and W. Franklin Jackes, of Ipswich, whom I had met in America. Familiar faces began to look good to the pilgrims so many miles from home, and I am especially indebted to Dr. Burne for many courtesies while in Sydney. In the afternoon we were taken for a motor ride around the city by Dr. W. S. Hinder, and had a most enjoyable time. I saw many American cars in Sydney as elsewhere, and there were many which I did not at first recognize as American on account of the body. I learned that in many instances the American chassis was imported and an Australian body placed on it. This, of course, was true mostly of the cheaper cars, and I was impressed with the fact that the Australian bodies are far and away superior both in artistic design and workmanship to the bodies on the same class of car at home.

After seeing Sydney in a most delightful way we took the train for Brisbane. And here I wish to record a solemn fact. I am perfectly assured that the good Lord made Australia and the people in it, but I am just as sure that when it came to the railroads the Devil had a finger in the pie. Never have I encountered such railway systems in my life. The railroads are all owned by the government, and from this moment I am opposed to government railroads. Think of the incongruity of a different gauge being used in each State. You cannot go from New South Wales into Queensland or Victoria without changing cars. Let this fact seep into your consciousness—the gauge in New South Wales is 4 feet 8 inches, in Queensland 3 feet 6 inches, and when you run west between Melbourne and Adelaide you encounter a gauge of 5 feet 6 inches. Can you beat it for foolishness—or discomfort? We never crossed a state line going or coming that we were not obliged to scramble out of one train into another with all our luggage at all kinds of hours.

Imagine a man traveling between Chicago and New York and being routed out of his car at the Indiana line, the Ohio line, the Pennsylvania line and the New York line! I should like a life-size picture of the average American citizen who would tolerate anything like that. And what a medley of confusion and inefficiency must be



Mosman's Bay, Sydney, N. S. W. A beautiful bay on the northern side of the harbor, fifteen minutes by ferry from Circular Quay.

presented to Australia some day in case of invasion if they attempt to move troops or provisions from one point to another. The condition is inexplicable, incongruous and antediluvian. It is a relic of the day not so long past when the different States of Australia gloried in different policies and pulled apart instead of pulling together. Before confederation—January 1st, 1901—each state was practically a separate colony with an entirely different fiscal policy, and a very stiff tariff wall between them. Imagine Illinois and Iowa charging a duty on products passing from one state to the other. The thing is unthinkable to a sane man, and yet that is precisely the condition which existed in Australia until very recent years. The only thing that has kept Australia on the map is because of her wonderful natural resources which compelled prosperity in spite of her political handicaps. But Australia is going ahead from this time forward at a wondrous rate. Nothing can stop it since the people have learned the fundamental lesson that it is more profitable to pull together than to pull apart. The one significant word in Australia today—the one thing they need more than all else—is Cohesion. And, yes—one thing more. Australia is cursed with too much legislation. Think of a population of less than five million people maintaining no fewer than fourteen houses of parliament. There are six states in all, including Tasmania, and each state has an Upper and Lower House—in addition to which there is the Federal parliament with an Upper and Lower House. They meet annually, which gives them an opportunity to do enough devilment to keep almost any country down. But I did not go to Australia with the idea of reforming her railroads or interfering with her politics, and so must subside; yet in passing I really cannot resist the delicious impulse to tell something of our experience with Australian railroads. Most of it was excruciatingly amusing to us when we could sufficiently control ourselves to forget the discomfort. First came the bother about the baggage. Unless you chase them up and insist on it they give you no checks for your trunks. You are obliged to hustle around and identify your baggage at the end of your journey. And they are particular to a pound how much baggage they carry. I have often wondered why it is that the Britisher and Australian loads himself down with so much hand luggage. I understand now. From Sydney to Brisbane our party had five trunks—three small steamer trunks, one hat trunk, weighing almost nothing, and one wardrobe trunk. We had four

full fare first-class tickets which I was assured by the ticket agency at Chicago would take nearly twice the weight of baggage we carried. But the agency evidently had not heard of Australian government railroads. At Sydney they charged me seventeen shillings excess baggage to Brisbane, which very cruelly crippled a five dollar gold piece. Coming back they charged me about thirteen shillings and then the Brisbane man confided to me that if I had not been an honest man and left the excess tags on my baggage I would not have been obliged to pay anything. Being a government road I was naturally puzzled to know why it cost so much more from Sydney to Brisbane than from Brisbane to Sydney. The only solution that I could figure out was that they must consider it more down grade on the latter trip.

Our sleeper berths had kindly been reserved for us by Dr. Moxham, and when we got on board we learned that the car was divided so that the ladies slept in one end and the gentlemen in the other—not a bad arrangement, by the way. The cars are smaller and lighter than ours, and the aisles are piled high with hand luggage. The roadbed is rough, and to walk from one end of the car to the other while the train is in motion is to institute a system of gymnastics which would show up entertainingly in a moving picture or a football field. I went into that car with a pretty decent pair of shins, I came out of it with some remnants. Dr. Dangar Burne and I were sitting chatting with the ladies when the conductor sang out: "This w'y, gentlemen, please—lidy, wants to go to bed." I bade a long farewell to my family and passed to the hive of men.

I was awakened in the night with a terrific crash. My head seemed telescoped into my diaphragm and my knees apparently hung up over my shoulders. I wondered how many were killed and lay listening for the groans. But to my surprise none came and I discovered that it was only their customary way of stopping the train. They do that always. The cars are so light they can start like a bullet and stop like the report. I raised the window blind to look out and found we were at a station—a very neat and attractive station, by the way, as most Australian stations are. The first thing that attracted my attention was a large and very loud sign, "YANKEE DOODLE," advertising some kind of tobacco. When you are more than 9,000 miles from home Yankee Doodle looks good even if it is booming tobacco.

There are no dining cars on the run from Sydney to Brisbane but the train stops quick and often at eating houses along the way. Talk about Chicago lunch counters! I supposed that in America I had witnessed the acme of rapid-fire eating at the "quick lunch troughs" we have at home, but the Australians can make our game look slow and placid. Those waiter girls are trained to the minute. As the engine digs in its toes, throws up the gravel and stops with a snort, the girls, neat, clean and attractive stand ready with a plate of soup gracefully poised, aiming it at your central incisors. I never saw such system. While one of them holds your nose and pours the soup down your throat another slams some fish in front of you. You are supposed to pay no attention to the bones—just bolt the whole business, and do your eating and aching afterward. Then follow meat, vegetables, pastry, fruit, everything—well-cooked, clean and palatable if one had time to properly absorb it. The only thing they lack is a ramrod to pack the food a little tighter and make it feel a trifle heavier. But it does pretty well at feeling heavy as it is. I did so much wish I had our good friend Mr. Horace Fletcher along with me on that journey just to watch him in action. I would willingly miss a meal myself to secure a moving and mental picture of his famous system of mastication under those circumstances. I would have it copyrighted and labeled "A Study in Contrasts."

So far as I was able to observe the average Australian is always hungry. Aside from the main eating houses, where we stopped at the slightest provocation, there were scattered along the line every few miles smaller places with the talismanic word "Refreshments" standing out. "Five minutes here, please, ladies and gentlemen," the guard would sing out, and then that starving Australian who had been forced to go without food for an hour or two, except for the fruit which he had on the train with him, would scramble out "Just for a cup of tea and a bit of sandwich." And bless his great open heart he was not quite happy unless he had you eating with him. I love those people even if they did nearly give me fatty degeneration, gout, and faulty metabolism.

We arrived at Brisbane Sunday night—just five weeks to the hour after we left home, and if further evidence were needed that we were expected in Australia we received it the moment we reached the hotel. Dr. White, the president of the Congress, had reserved rooms for us and here we found that loving hands had been at work

for our comfort. We had a spacious sitting room off the bedroom with a piano and everything cozy. And this sitting room was banked with flowers and decorated in a way to make us feel at home immediately. There were bouquets from Dr. and Mrs. White and from our good friends of Sydney—Dr. and Mrs. Alfred Burne and Miss Burne. Dr. Burne has been to America so many times that he has endeared himself to the hearts of Americans in such a way that we no longer look upon him as a stranger. He and his son Dangar sent us a cable at Auckland on the way over bidding us welcome to Australia. I shall never forget it. Mrs. Burne and Miss Burne had come up to Brisbane in advance, and had done much to see that our comfort was complete. Dr. Burne was coming by boat a few hours later, but not wishing to be outdone by the others in the way of welcome sent a wireless message from the ship. To this message was also signed the name of a man I had never met but of whom I had heard, Dr. E. R. Magnus of Sydney, and I wish to say something in detail of him later. With so many good friends, old and new, flocking around us it was difficult for us to realize that we were away from home. Suddenly I saw a man and exclaimed, "Hello, Mr. Iliffe, how are you!" I had never seen him before but I knew him by his picture, and I took him by the hand as an old friend from long and cordial correspondence with him. He was the honored president of the Second Australian Dental Congress, and has done much for dentistry in Australia. He is the Editor of the *Australian Journal of Dentistry* and an integral part of the Melbourne Dental Hospital. I am indebted to him for many courtesies.

During our stay at the hotel, Mr. W. R. Parker of Brisbane, whom I had met in Chicago, kept our rooms well supplied with fine, fresh pineapples just from the plantations, and in many ways added to our comfort, while his office companion, Mr. A. H. Sagar, placed his car at our disposal—an American car with an Australian body. Across the street from our hotel was the agency of two American cars, and I am not sure that Dr. White did not select these particular rooms for the express purpose of making us feel at home.

The opening of the Dental Congress Monday morning was most auspicious. It was graced by the presence of Sir William MacGregor, Governor of Queensland, and Lady MacGregor, the Governor favoring the event by delivering the opening address. As I entered the hall I was profoundly affected to see it draped with the

Stars and Stripes beside the Union Jack, a most gracious tribute to the American delegate, and when I stepped forward on the platform to respond to the address of welcome by the Hon. Secretary to the representative of the United States, and looked into that "sea of faces" and heard the burst of applause which greeted me, and then as I glanced for a moment at those two flags I was nearly overcome by emotion. I have little idea what I said but I at least spoke from the heart.

England had a representative from the British Dental Association, Dr. F. Canton of London, a most polished and charming gentleman, whose presence was highly appreciated by all. All together the opening event was inspiring and augured well for the success of the Congress.

C. N. J.

(To be continued.)

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

To Remove Blood Stains:—To remove the blood stains from white clothes, pour some H_2O_2 on the spot and wipe it off with alcohol.—*Michael Diratsouyan, Smyrna, Turkey in Asia.*

Avoiding Nodules in Casting:—Sometimes in casting cusps nodules will appear at the junction of the cusps and the band. This is caused by the moisture from the investment driving the air out of the dried investment within the band and can be avoided by dropping the band with the wax cusps in water a minute before investing.—*J. A. Wells, D. D. S., Shawnee, Okla.*

To Overcome Gagging:—Had a patient last week that gagged from the rubber dam. I took some potassium bromide and made a solution in water by guess and with cotton on the foil carriers rubbed this solution over the tongue and palate. I then filled the

tooth without any trouble. Before taking an impression this will have the same effect.—*G. H. Henderson, Springfield, Ill.*

A Useful Instrument:—When burring into a tooth which is putrescent or in a tooth having an alveolar abscess, we find that we produce very much pain, even when the smallest bur is used. In burring through sound enamel we are likely to break the bur at the neck. By taking an old bur and forming it into a very fine drill having the end come to a fine joint, you will find that less pain is produced with this instrument and the operation is made easier.—*S. Zimmerman, Chicago.*

An Easy and Aseptic Method of Caring for a Dental Hypodermic Syringe:—After use do not detach needle. Expel unused contents. Draw up and expel alcohol several times. Repeat the process using sterile water leaving a quantity of the water in the barrel next to the plunger leather to keep the same soaked. Then draw up a few drops of alcohol through the needle, wrap the entire syringe in an aseptic doily and put away. Just before using again, expel contents and rinse out several times with sterile water.—*D. L. Woodworth, D. D. S., Anna State Hospital.*

A Simple Method of Tightly Wrapping Cotton on a Broach for Root Canal Treatments, Etc.:—A fine round steel broach should be annealed in a flame. Now hold the end of the broach tightly with a pair of flat-nosed pliers and draw it smartly through same. This will cause the broach to become somewhat flattened. Hold a shread of cotton between the thumb and first finger of the left hand and lay the flattened end of the broach on it. By revolving the broach and pressing the finger and thumb slightly together the cotton will become tightly wrapped around it. To remove the cotton from the broach, as a dressing in a canal for example, revolve it in the opposite direction and gently withdraw when the medicated cotton will remain behind.—*A. Dangar Burne, D. D. S., L. D. S., Sidney, Australia.*

Injecting Adrenalin:—When adrenalin is injected into the tissues, even in extremely small doses, it temporarily raises the arterial blood pressure, acting as a powerful vasoconstrictor by

stimulating the smooth muscular coat of the blood vessels, and thus produces local anemia. Large doses finally reduce the blood pressure and heart failure results. The respiration at first quickly increases, but slows down and, finally, stops with expiration. Its action is largely confined to the smooth muscle fibers of the peripheral vessels. Adrenalin is destroyed by the living tissue cells, the body ridding itself of the poison in some unknown manner. While adrenalin does not possess local anesthetic action, it increases very markedly the effect of certain anesthetics when combined with them. Very recently it has been shown by Esch that adrenalin possesses a specific action on nerve tissue, viz.: it prepares the latter tissue in a peculiar way, so as to take up the anesthetic more rapidly.—*Hermann Prinz, M. D., D. D. S., St. Louis.*

Peritonsillar Abscess (Quinsy):—Coincident with a tonsillar infection, the bacteria may enter the peritonsillar tissues causing a peritonsillitis. This may be simply an inflammatory process which resolves with the deposition of some fibrous tissue, or it may continue to form an abscess. A peritonsillar abscess usually follows a follicular or a perenchymatous tonsillitis. In about 90 per cent (Coakley) of the cases, the infection spreads external to the tonsil into the loose connective tissue and then extends upward and inward into the soft palate. In the remaining cases the process extends into the lateral oropharyngeal wall or into the tonsil itself.

Symptoms. The onset, due the associated tonsillitis, has a symptomatology practically identical with the latter condition, except that it may be more severe. The abscess formation is usually manifested by a chill followed by a fever. Due to the swelling of the parts, the re-infection. This is the tonsil which is a source of danger to the patient and eventually leads to a chronic hyperplastic tonsil which demands prompt removal.—*T. W. Brophy, M. D., D. D. S., Chicago.*

Technique of Root Amputation:—Having fully determined upon the necessity for a partial root excision—and this presupposes that said root has undergone the proper and necessary preliminary treatment with a final filling inserted therein—the already established sinus is to be increased in diameter by making a slight lateral incision in opposite directions to the opening, this to be followed with a few packings of gauze, which will usually bring into view very

distinctly the end of the root. The amount of tissue to be removed will have some influence in determining as to how it can best be accomplished expeditiously; if only a minute portion of the end of the root is to be removed, it can best be done with a suitably selected stone run by the dental engine; if, however, a greater area is involved I would first use a diamond shaped drill, passing it through the root and succeed this with a fissure bur, cutting both ways until the end is severed from its parent. Final smoothing of the roughened end left by the bur can best be done with a fine Arkansas stone. Thorough flushing of the cavity with a warm normal salt solution immediately following the operation places the surrounding tissues in a most favorable condition for future recovery.—*J. G. Reid, D. D. S., Chicago.*

Diseased Teeth Affect the General Health:—In December, 1911, a business man (P. MacG.) 46 years old, came to the office for general examination on account of aching and transient pains in various parts of the body and a backache in the lower lumbar and sacro-iliac regions which he feared was due to kidney trouble. He had a dull headache at times, lacked his usual energy and suffered from general nervousness and restlessness and was easily worried. Appetite and digestion good; bowels regular. No urinary disturbance and no loss of weight. Hemoglobin, 80 to 90 per cent; urine, normal; blood pressure, 135 mm. Thorough physical examination revealed no pathological condition with the exception of a slight soreness of the right lower molar. The case was typical of mild neurasthenia and the attention of the patient was called to the importance of the condition of the teeth. It was suggested that his dentist make careful search of the teeth for a source of intoxication. None could be found. On January 8, 1912, the patient reported that he had quite a severe pain in the right side of the face and some soreness to pressure. On the following night the pain became more severe, face swollen, temperature 103° F. An oral surgeon was called. An infection had originated in the above mentioned right lower molar under a filling and had developed into an alveolar abscess and periostitis. Pus was evacuated and drainage established, and nine days later the patient reported that he felt better than at any time for a year.—*Wilber E. Post, M. D., Chicago.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

SAUNDERS CATALOGUE.

W. B. Saunders Company, publishers of Philadelphia and London, have issued another edition (17th) of their handsome illustrated catalogue.

NORTHERN INDIANA DENTAL SOCIETY.

The twenty-fifth annual meeting of the Northern Indiana Dental Society will take place at the great steel city of Gary, September 23, 24 and 25.

W. LEROY MYER, Secretary, Rensselaer, Ind.

IDAHO STATE BOARD OF DENTAL EXAMINERS.

The Idaho State Board of Dental Examiners will meet in Boise, at the State Capitol building, Monday morning, July 7, 1913.

ALBERT A. JESSUP, D. D. S.

WISCONSIN STATE DENTAL SOCIETY.

On account of the conflicting dates of the National Dental Association, the Wisconsin State Dental Society will meet July 22, 23 and 24 at Madison, Wis.

O. G. KRAUSE, Secretary.

NORTH DAKOTA BOARD OF DENTAL EXAMINERS.

The next regular meeting of the North Dakota State Board of Dental Examiners will be held in Fargo, July 8, 9, 10 and 11. For further information address

F. A. BRICKER, Secretary, Fargo, N. D.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Michigan State Board of Dental Examiners will be held at the dental college, Ann Arbor, commencing Monday, June 16, at 8 a. m., and continuing through the 21st. For application blanks and full particulars address

F. E. SHARP, Secretary, Port Huron, Mich.

XI PSI PHI HEADQUARTERS, NATIONAL DENTAL ASSOCIATION.

Headquarters for the members of the Xi Psi Phi Fraternity will be established at the Baltimore Hotel, Kansas City, Mo. Special accommodations have been made for train service from Chicago and all members of the Fraternity east of Chicago are invited to avail themselves of this service. For further information address

C. C. MARKEY, D. D. S., Sec., 1740 Greenleaf Ave., Chicago, Ill.

THE AMERICAN DENTAL SOCIETY OF EUROPE.

The officers for the following year are:

President—Dr. W. S. Davenport, Paris.

Vice President—Dr. A. Chiavaro, Rome.

Secretary—Dr. G. B. Hayes, Paris, Ave. d l'Opera 17.

Treasurer—Dr. O. Solbrig, Paris.

Microscopist—C. F. Bödecker, Berlin.

Editor—Dr. W. A. Spring, Dresden, 40 Nürnberger Street.

Next meeting to be held in Paris during summer of 1914.

COURSE OF DENTISTRY IN THE PUBLIC SCHOOLS.

Cleveland, O., April—Under the direction of Dr. E. A. Peterson, chief school medical inspector, a course in dentistry has been added to the curriculum of the Cleveland public schools.

The dentists' organization of this city mapped out what they thought should be incorporated in a course of lectures which are now being given by doctors and teachers.

One result of the dental talks, which have been illustrated with moving picture films, has been nearly 3,000 new pupil patients for Cleveland dentists.

CHARLES D. LEWIS, Chagrin Falls, Ohio.

MINNESOTA STATE DENTAL ASSOCIATION.

The thirteenth annual meeting of the Minnesota State Dental Association will occur in Masonic Temple, Minneapolis, Friday and Saturday, June 13-14, 1913. Every phase of dentistry will be presented by men of unquestioned ability from Dr. Raper, of Indianapolis, with stereopticon lecture on root canals to the effect of pathological conditions of the mouth on systemic conditions which will be presented by Dr. C. H. Mayo, of Rochester, whose name is familiar wherever medicine is practiced. A large manufacturers' exhibit will round out what we expect to be an unusually large meeting of the organization. For information, address

BENJAMIN SANDY, Secretary, 636 Syndicate Bldg.

WYOMING STATE BOARD OF DENTAL EXAMINERS.

The Wyoming State Board of Dental Examiners will meet for examination of applicants July 1-3, 1913, at Cheyenne, Wyo. An examination is required of all applicants and only holders of diplomas from reputable dental colleges are eligible to such examination. The Board does not interchange with other states, nor issue any temporary permits. All applications must be completed and in the hands of the Secretary fifteen days prior to the time set by the Board for examinations to begin. *The written examination consists of Anatomy, Physiology, Histology and Bacteriology, Chemistry and Metallurgy, Oral Surgery, Anaesthetics, Operative and Prosthetic Dentistry, Materia Medica and Therapeutics, Prophylactics and Orthodontia. Hand instruments for operating is all the candidate need furnish. For further information and application blanks address

PETER APPEL, JR., P. O. Box 643, Cheyenne, Wyo.

THE CHICAGO, MILWAUKEE & ST. PAUL RAILWAY.

reports that there are openings for dentists in the following towns on their lines: Idaho: *St. Joe. Iowa: Atkins, Bagley, Defiance, Earling, Postoria, Lytton, Panama, Perry, Rubio, Vining, Vivian. Missouri: Braymer, Laredo. Montana: *Drummond, *Ismay, *Lavina, *Martinsdale, *Plevna, *Ryegate. *Terry. North Dakota: *Bentley, *Bucyrus, *Lawther, Monango, *Regent, Scranton, Strasburg. South Dakota: Bradley, Butler, *Dupree, Hosmer, Interior, Java, Kadoka, Kennebec, Orient, Presho, *Timber Lake, Weta, Zeeland. Washington: *Cle Elum, *Ewans, *Kapowsin, *Lind, *Morton, *Warden.

*Designates towns located west of Mobridge, S. D., on the "Puget Sound Lines" and towns not thus designated are located on the "Eastern Lines" of the Chicago, Milwaukee & St. Paul Railway.

INTERNATIONAL DENTAL CONGRESS, 1914.

The sixth International Dental Congress will be held in London from August 3rd to 8th, 1914, at the invitation of the British Dental Association.

His Majesty, King George V, has graciously consented to be the Patron of the Congress, which will take place at the University of London and at the Imperial College of Science and Technology, South Kensington.

The president of the Congress will be Mr. J. Howard Mummary, and the joint general secretaries are Mr. Norman G. Bennett and Mr. H. R. F. Brooks. Mr. H. Baldwin is honorable treasurer.

A committee of organization, under the presidency of Mr. W. B. Paterson (president of the International Dental Federation), with Mr. F. J. Pearce as

honorable secretary, has been busily engaged for some time in making the preliminary arrangements.

Previous congresses have taken place in Paris, 1889; Chicago, 1893; Paris, 1900; St. Louis, 1904; and on the last occasion at Berlin, in the Reichstag, in 1909, when the German Emperor took a personal interest in the meeting, delegates attended from twenty different countries, and the governments of many of them were officially represented.

Invitations are being issued to dental organizations throughout the world, and it is hoped thus to secure the co-operation of leading specialists and representative authorities in all branches of dental surgery.

The rules of the International Dental Congress provide that all ethical practitioners of dentistry possessing the qualification of the country in which they received their professional education, or of the country in which they practice, are eligible for membership.

The subscription for members of the Congress will be 30s. (38 francs; 31 marks; 7½ dollars), and for members of their families accompanying them 15s. (19 francs; 15½ marks; 3¾ dollars).

The offices of the Congress are 19 Hanover Square, London, W., to which address all communications should be sent.

NATIONAL DENTAL ASSOCIATION.

The 1913 Session of the National Dental Association will be held in Kansas City, Mo., July 8 to 11. The reorganization of the Association should make this the most important meeting in its history. Every state society that has met since the new Constitution and By-Laws was adopted, at the Washington meeting, has voted to become a constituent society, and we can all appreciate the influence of such an organization if all the state societies take similar action.

The officers and committees have been active in preparing an exceptionally interesting program. At this date the following literary program is tentatively announced:

Dr. Frank O. Hetrick, Ottawa, Kan., "President's Address." Dr. Adolph Fenchel, Hamburg, Germany, (subject to be announced later). Dr. Weston A. Price, Cleveland, O., "Scientific Foundation Fund." Dr. Roscoe A. Day, San Francisco, Cal., "Orthodontia and Its Relation to Dentistry." Dr. Marcus L. Ward, Ann Arbor, Mich., "Metallurgy." Dr. Richard L. Simpson, Richmond, Va., "Unbanded vs. Banded Crowns." Dr. Percy H. Howe, Boston, Mass., "The Saliva." Dr. Arthur D. Black, Chicago, Ill., "Something of the Etiology and Early Pathology of Diseases of the Peridental Membrane, with Suggestions as to Treatment." Dr. Hermann Prinz, St. Louis, Mo., "A Preliminary Report on Action of As2 O3." Dr. Howard R. Raper, Indianapolis, Ind., "The Value of the Radiograph in the Practice of Modern Dentistry." Dr. G. S. Junkerman, Cincinnati, O., "Dental Educational Harmony." Dr. Clarence J. Grieves, Baltimore, Md., "Periapical Infections." Dr. Burton Lee Thorpe, St. Louis, Mo., "Prophylaxis." Dr. H. B. Tileston, Louisville, Ky., "Diagnosis and Treatment of Diseases of the Dental Pulp."

The Clinic Committee has been very energetic in preparing their program and we have every reason to expect that they will present a very strong list of clinicians. The Local Committee of Arrangements are providing ample facilities for a large meeting and have selected the Baltimore Hotel as headquarters. We are not prepared at this time to publish anything pertaining to railroad rates. Information regarding transportation from any point may be secured from any local railroad agent, as they have full information with reference to all rates granted by various passenger associations in their particular territory.

The following are the hotels, with rates. We would suggest that persons interested make reservations direct with the hotel of their selection:

Hotel Baltimore (headquarters)—One person, without bath, \$1.50 and

\$3.00 per day. One person, with bath, \$2.50 and \$6 per day. Two persons, without bath, \$2.50 and \$3 per day. Two persons, with bath, \$4 and \$7 per day.

Sexton Hotel—One person, without bath, \$1 per day and up. One person, with bath, \$2 per day and up.

The Coats House—One person, without bath, \$1 to \$2 per day. One person, with bath, \$1.50 to \$3.50 per day.

Hotel Savoy—One person, without bath, \$1 to \$1.50 per day. One person, with bath, \$1.50 to \$2.50 per day.

Hotel Victoria—Single, without bath, \$1 and \$1.25 per day. Double, without bath, \$1.50 and \$2 per day. Single, with bath, \$1.25 and \$1.50 per day. Double, with bath, \$2 and \$2.50 per day.

Hotel Kupper—Single, without bath, \$1 and \$1.50 per day. Double, without bath, \$2 and \$2.50 per day. Single, with bath, \$1.50 and \$2.50 per day. Double, with bath, \$2.50 and \$4 per day.

Densmore Hotel—Single, without bath, \$1 per day. Double, without bath, \$1.50 per day. Single, with bath, \$1.50 per day. Double, with bath, \$2 to \$2.50 per day.

Hotel Edward—Rates \$1 per day and up.

Hotel White—Rooms, running water, hot and cold, \$1 per day. Rooms, shower or tub bath, \$1.50 per day. Rooms, outside, bath with tub, \$2 per day.

All reputable practitioners of dentistry and medicine are cordially invited to attend this meeting.

Fraternally,

FRANK O. HETRICK, President,
Ottawa, Kansas.

HOMER C. BROWN, Rec. Sec'y,
185 East State Street, Columbus, Ohio.

MOUTH HYGIENE.

A SPECIAL FEATURE OF THE FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE, INCLUDING PLANS OF ORGANIZATION AND CO-OPERATION.

The dental profession of the world has been honored by an invitation from Dr. Thomas A. Storey, Secretary-General of the fourth International Congress on School Hygiene, which meets in Buffalo, August 25-30, 1913, to participate in the most elaborate effort that has yet been made towards placing School Hygiene before the world in its true relation to the health, strength and working efficiency of the human race.

This is one of the most important opportunities that has come to the dental profession in its history for the purpose of presenting the various phases of Mouth Hygiene in their relation to Hygiene in general.

At this meeting will be assembled the largest number of people that have ever gathered in this country for the purpose of considering those questions which deal with School Hygiene. Not only the leading educators and school officials of this country but of the world will be assembled on this occasion.

This means that every state in the Union will be represented by educational people and it is therefore highly important that every section of the country that is doing anything along the Mouth Hygiene line be represented in connection with the scientific exhibit dealing with the various phases of School Hygiene.

A large amount of space has been set aside to be devoted exclusively to the exhibition of material dealing with the various phases of Mouth Hygiene. It behooves every dentist that is interested in the Mouth Hygiene movement to see that his state, city or town has some sort of a display in connection with this work.

The organization of the Mouth Hygiene Literary and Scientific Exhibit part of the program has been placed in charge of the writer of this article.

An extensive literary program has been practically completed for that occasion.

That the Mouth Hygiene Exhibit may be in keeping with the importance that Mouth Hygiene bears to School Hygiene in general, I am extending an invitation to the Oral Hygiene Committee of every dental organization of the country to participate in this exhibit.

Where a committee has nothing else to offer I would suggest that they prepare a chart or a large card, preferably black background with white lettering, and framed in a black frame about an inch in width. The lettering on this card to be large enough to be read at a distance of twenty-five or thirty feet.

In organizing this work I am asking the Oral or Mouth Hygiene Committees of the State societies to assume responsibility for the state exhibit and requesting all other dental organizations to co-operate with the State committee in making a state exhibit, but requesting that each individual committee present its exhibit as a component part of the state exhibit but retaining its distinctive feature. The state exhibits to become part of the national exhibit, each state becoming a component part of the national exhibit but retaining its individuality. The state exhibits will be arranged in alphabetical order so that the guests from any state will have no difficulty in ascertaining what is being done in that particular state.

The chairman of the various state organizations constitute a national committee, this committee to include the Oral Hygiene Committee of the National Dental Association and the chairman of the various state committees appointed by the National Mouth Hygiene Association. The chairman of the National Dental Association's Committee to be the executive officer of this national committee.

The National Mouth Hygiene Association has agreed to co-operate with the Congress to the extent of making its annual literary program a part of the Congress' literary program and is organizing its membership in the various states and cities along the same lines suggested for the organized dental profession above.

In appointing its committees on exhibits it has followed out the policy of appointing those of its members who are known to be members of the state or local Oral or Mouth Hygiene Committees as its representatives. The National Mouth Hygiene Association will also appoint one of its representatives to co-operate with Dr. Gram at Buffalo in arranging for exhibits.

I do not have at my command the names of the committeemen of the various dental societies of the country and am therefore taking this means of notifying these committees of the part that they are expected to take in this work requesting that they communicate with me at once indicating their willingness to co-operate and the style of exhibit that they expect to make.

I wish to say to the Oral Hygiene committees that if they are contemplating any work along the Mouth Hygiene lines they should have something in connection with the exhibit to indicate what they are doing or what they contemplate doing in order that the educational people from their sections of the country may find that they have a live committee in existence.

We would like to suggest to the State committees that they secure a large map of the state and indicate by means of various colored tacks the places and kinds of work that are being done.

I wish to impress upon the various State committees the importance of having their Mouth Hygiene exhibit because of the fact that those in charge of this work expect to make a presentation of Mouth Hygiene part of the program which will be so impressive that every person who attends the congress will be deeply interested in the Mouth Hygiene work. To have the exhibits split up and made part of the general hygiene exhibits would do much to lessen the impressiveness of the Mouth Hygiene exhibit.

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THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, JULY, 1913.

No. 7

PRESIDENT'S ADDRESS.*

BY DR. GEORGE O. WEBSTER, BERLIN.

Mr. Chairman and Fellow-Members of the American Dental Society of Europe:

It is with genuine pleasure that, on behalf of the officers of the organization, I welcome you to this, the fortieth annual meeting. A more delightful place for our gathering could scarcely be imagined than this beautiful old Italian city on the Arno. A city pregnant with interest for every student of art and history. Located, as it is, so great a distance from the center of our activities, it is indeed gratifying that so many of you have laid aside your instruments for a time and journeyed so far for the promotion of the interests of this society.

It is with feelings of sadness that I here note the great loss that this society and the entire dental profession has suffered since we last met in the deaths of Dr. C. F. W. Bödecker and Dr. Norman W. Kingsley. Dr. Bödecker passed away the 29th of last April and Dr. Kingsley the 20th of last month. Both men have always held a high place in our esteem as men of sterling worth and character, who gave generously of their time and ability for the general good of the profession and at the proper time I shall ask your leave to appoint committees to prepare resolutions indicative of our sense of loss and esteem.

As is usual when holding a meeting at this season of the year and especially when we are called together so far to the Eastward, we shall be denied in large measure the inspiration and pleasure usually derived from the presence of our confrères from across the sea. It will be what we have become accustomed to call a "Family

*Read before the American Dental Society of Europe.

Meeting" and in casting about in my mind what subject I might select which would prove of interest to you, I have found no easy task.

Of the history of the society since its founding on the Rigi in 1875, even the youngest member is fairly well acquainted. Former Presidents have pointed out scientific landmarks and given us good advice as to our duty to ourselves and to our patients and it occurs to me that possibly I cannot better fill the limited time I shall allow myself than in asking you to counsel together with me concerning the future well-being of the society.

May it, however, be distinctly understood that it is not anticipated that any of the suggestions here submitted are worthy of your immediate adoption but rather they are made in the hope that you may keep them in mind and give them candid consideration and possible future action.

As one of the prerequisites of this office I have had the privilege of having constantly at hand the complete records of the society. A careful study of its history cannot fail to inspire one with an immense respect for the effective work accomplished during those early years and even a larger sense of appreciation of the heritage that is ours. It is a noble and commendable privilege to carry forward the work so splendidly begun and there is also a tremendous responsibility which we cannot escape if we would.

May we not, in some measure, capitalize that inspiration which is part of our heritage from those who planted the foundations of our prosperity here in Europe, into added enthusiasm for our work and our society? One must needs agree with Emerson that "Nothing great was ever achieved without enthusiasm," and it seems to me pertinent to the occasion to ask if means cannot be devised for the arousing of added interest in our work.

One need not go far back in our history to note how often the same names appear upon our programs and, conversely, what a proportionately large number of members have taken no active part in our meetings. Is it possible to bring this latent talent into being? Because of the fact that our membership is so widely scattered, it is quite unlikely that division into Sections for the prosecution of scientific investigation, as is done in other societies, will ever be possible and our activities for the common good will necessarily continue to concentrate in our annual meetings, and for this reason

it would seem as if we should make every possible effort to bring home to every member the realization of individual responsibility.

Much of the hesitancy to take active part in our proceedings arises from a natural reluctance on the part of members to make any effort unless they feel that they have something of vital interest, important enough to make a sizeable paper. This is an error that should be early corrected.

Every member who comes to these meetings and, I may also add, those who do not make it a practice to attend, has something of interest to every other member. Again, to quote Emerson, "Each man has an aptitude born within him to do easily some feat impossible to any other." There is nothing that will aid us in our work or will make it easier for our patients that is too unimportant to share. I believe you will agree with me that, as a rule, we carry away from these meetings as much, or more, of practical benefit from the little suggestions we have received outside the meeting room as we have obtained from the papers and demonstrations. Question? Would it be feasible and desirable for us to set aside an hour at each meeting to be devoted to these little suggestions? Make it, if you please, in the nature of a "Dental Smoke Talk," where one might bring forward the knowledge of the small bridges which have assisted to carry us over the larger streams of everyday experience, as also the record of the causes of some of our failures, from which we often learn more than from our successes.

Such a large part of our work is purely mechanical in its nature that it is the little practical hints which help over the hard places and which we find of such inestimable value when we return to our offices and take up our daily routine of work. Could we be made to feel the value of these little suggestions and to understand our individual responsibility, I am sure our sense of justice would do the rest and we should have an abundance of material for our meetings. Add to this the amount of material which we have every right to expect from the large increase in membership, of which the list of candidates gives such ample promise, and we shall soon have more than we can make available, except—and here I come to the second problem. Our society is peculiarly constituted. Probably no other dental organization in the world meets under similar conditions. Our members live hundreds of miles apart and, at all times, some of them reside hundreds of miles from the place of

meeting. The gatherings are, for the most part, held in interesting, old world cities, filled with interest to the casual visitor. The members attend tired and worn from overwork and are justified in the hope that they may receive some rest and recreation from their attendance. Many have never visited the city before and some may, perhaps, never be permitted to come again. Such conditions cannot help but distract from the interest of the meeting.

Can arrangements be made whereby, without losing anything from the wealth of papers and clinics and without increasing the number of days usually allotted to the meeting, we may have more time for rest, recreation and good fellowship?

Primarily, I would venture the suggestion that we give more attention to clinics. They teach quickly and effectively and many can be given in a comparatively short time. Members can, and will, provide splendid material for clinics who would not attempt a paper. There should, and I feel sure will soon, be more papers than can be used to advantage at these meetings. All may be interesting and instructive but a certain proportion of them elicit no, or at least perfunctory, discussion. Understand me, I do not underestimate their value or interest but because they are simply statements of fact, they are not in their very nature, discussable. Such papers are just as, if not more, valuable when read at our own hearthstones. Every paper should form a part of the proceedings and be promptly published but if all contributions were first submitted to your Editor, Secretary or, if you please, to a committee especially appointed for the purpose and from the total number only those were selected that would need to be illustrated by stereopticon or diagrams or would naturally elicit an interesting discussion, at least one-half of the sessions could be dispensed with so that the forenoons only need be occupied and the afternoons could be given up to the much needed rest and recreation. The only objection I can see to such an arrangement is that it might take some time to disabuse our minds of the fact that it must necessarily be the best papers that would be selected, which would in no sense be true but only those which presented the attributes before noted.

I ask you, many of whom I am sure came here largely from a sense of duty, tired and worn from close application to your office for many months, if such a program would not appeal to you?

In looking forward, another thing appears to me to be pres-

ently desirable. If this society is to fulfill the promise of its glorious past, we should have in the near future a permanent Corresponding Secretary. This office is the most important in our organization and no one who had not been honored with the position can have any adequate conception of the amount of detail work the office entails and its duties are becoming heavier with each succeeding year. That the work has always been cheerfully, willingly and well done in the past is no argument for the future. We are already paying out a large sum to have our proceedings reported and have been extremely fortunate in having had, not only, men well qualified for the work but men fairly familiar with dental terms and literature. We may not always be so fortunate. A very little additional expense would be incurred in the securing of some good stenographer who would familiarize himself with the duties of the office and remain year after year to concern himself with the details of the work and attend and report the meetings. Such an arrangement would not only relieve the society of an immense amount of routine clerical work, but once familiar with the details of the office, become invaluable to the welfare of the society and we should only be exercising that foresight and common sense which actuates the capable, far-seeing business man who retains the man of experience instead of continually changing his employees.

Regarding the publication of our proceedings. We have been extremely fortunate in the gratuitous service which has been rendered for so many years but in these times, when rapid change is the order of the day, ideas presented in papers reaching the profession at large some months after delivery, run the danger of having become obsolete, or, at least, not in keeping with the spirit of the times. Cannot we, who contribute directly for the support of this society about as much as we would lavish on an evening at grand opera, afford a little more consideration to those who take the time and trouble to prepare papers for us?

The time was when, as a struggling society of limited membership, we were justified in accepting gratuitous publication of our proceedings but I submit—that a little more expended from our treasury would be a worthy concession to our dignity and I believe that serious consideration of the subject will convince you that the time has nearly arrived when we should take over this important detail ourselves.

This society has never been as prosperous as it is today. Under the provisions of the present constitution the membership will be largely augmented. The spirit of progress prevails. This society, together with all dental organizations, cannot escape the impetus that is being given the profession throughout the entire world by the wide-spreading knowledge of the necessity of proper oral hygiene. The world is awakening to the fact that effective work and progress mean the necessity for a sound, vigorous body and that the most important prerequisite for this happy condition is a normal, healthy condition of every part of the alimentary tract. The time is not far distant when the dentistry of today will be remembered only as the crude beginning of a much more skillful and scientific tomorrow and we, in turn, will be looked upon as the pioneers of this immense movement which is so rapidly engaging the attention of educators in all civilized countries, for we are today active members of that great army of humanitarians who are, in so large measure, to revolutionize prevailing ideas of life and living.

This society will, I am sure, show no abatement in the splendid work it has done in the past but, with an ever increasing solidarity and mutual helpfulness, do its full share in carrying forward every movement which can tend towards the advancement of the profession.

A NEW METHOD OF MANDIBULAR PROSTHESIS.*

BY DR. ANGELO CHIAVARO, ROME, ITALY.

The patient, E. P. was admitted in the III Section, directed by Prof. Roberto Alessandri, of the "Umberto I. Policlinic," Rome, to undergo an operation for a sarcomatous tumor which had extended over the left side of her mandible.

Prof. Roberto Alessandri, who has had occasion to see the good results of maxillary prosthesis, never neglects to avail himself of it in appropriate cases and did me the honor of requesting my assistance in the substitution of the extended tract of mandible which in this case he had to remove.

The tumor, of a hard consistency, of an irregular ovoidal aspect, with its greater axis directed from front to back and from right to left was the size of a large orange, with a smooth non-

*Read before the American Dental Society of Europe.

yielding surface, well defined limits, reaching with its upper surface half an inch above the labial angle; below it extended half an inch beyond the mandibular border; at the back it extended to the angle of the jaw and in front about half an inch beyond the median line.

The tumor was firmly connected with the body of the jaw, the right half of the alveolar process being displaced backwards and towards the median line, so that the right cuspid, bicusps and

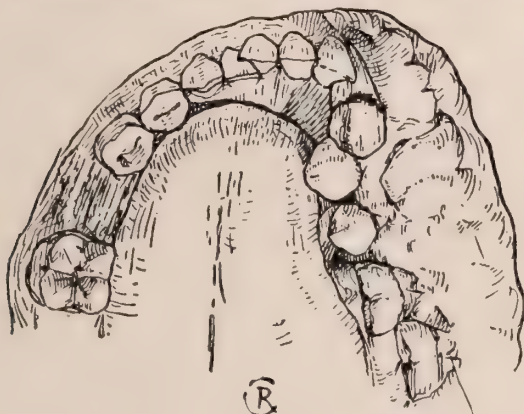


Fig. 1.

Fig. 1—Sarcomatous tumor on the right side of lower jaw.

molars were pushed inwards and were lying almost horizontally along the median line on the floor of the mouth. The corresponding vestibular cavity was almost entirely filled by a fleshy, irregular mass, rather lumpy, presenting a mucous surface which was partly normal and partly ulcerated.

The patient, 18 years old, was in a marked cachetic condition; so much so that on the 11th of July, 1911, she fainted several times whilst I, though causing her no pain, was scaling her teeth from tartar and was taking impressions of the upper and lower jaws. From these impressions I obtained models on which the jaw retaining apparatus with retaining wings for the sound left side was made. On the right side of Fig. 1, reproducing the model of the teeth of the lower jaw, the tumor is shown, with the incisors, cuspid and posterior teeth displaced in various directions.

Next day I saw the patient again and filled a decayed cavity

in the upper right second bicuspid, which I had dressed at the preceding sitting.

On the upper and lower left posterior crowns of teeth (sound side) I cemented the two retaining apparatus with wings, which I made of swaged gold plates, each of them looking as a series of continuous shell crowns; to the vestibular side of each swaged pieces I soldered the retaining wing. This retaining apparatus could be called "*shell crowns capping piece with wing*" (1). The

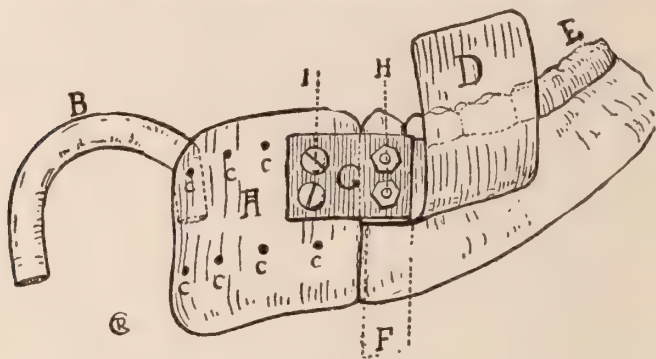


Fig. 2.

Fig. 2—A, temporary mandibular substitution appliance made in vulcanite; B, metallic tube for attachment of rubber tubing, through which antiseptic solution is driven so as to pass under pressure through the orifices (c, c, c, c,) thus washing the oral cavity; D, metal retention wing soldered to the swaged shell crowns capping piece made for the lower posterior teeth; E, the retention wing is represented in the figure as if it were transparent, so as to show the underlying capping piece; F, metal band soldered to the lower shell crowns capping piece carrying two screws (H) soldered to its free end; G, metal band fastened on one side with screws (I) to the mandibular substitution appliance and on the other side with nuts to the two screws (H) of the band, which extends forward of the shell crowns capping piece.

capping piece for the lower left posterior teeth extended as far as the first left bicuspid (Fig. 2E), as the resection of the jaw was to take place (according to Prof. Alessandri) between the left lower cuspid and left lower lateral incisor. In the anterior portion of the lower swaged shell crowns capping piece on its labial surface a rigid band of German silver was soldered (Fig. 2 F.), about one-sixteenth of an inch thick and half an inch high, reaching till within an eighth of an inch from the mesio-labial angle of the lower left cuspid. On the outer surface, towards the free end of this band, one-eighth of an inch from the upper edge, a screw was soldered

(1) For the construction of these appliances see A. Chiavaro "Paradental cysts and mandibular prosthesis." Naples, 1905, p. 217 and following.

at right angle with the surface and one quarter of an inch long; and a similar screw was soldered one-eighth of an inch from the lower edge (Fig. 2.H) both meant to engage in corresponding holes bored in a solid rectangular band of galvanized iron, which was already screwed on the labial surface of the joining artificial mandibular piece, which was intended to substitute temporarily the to be resected portion of lower jaw bone (Fig. 2.G).

Whilst the labial extension of this band leaves the operator free

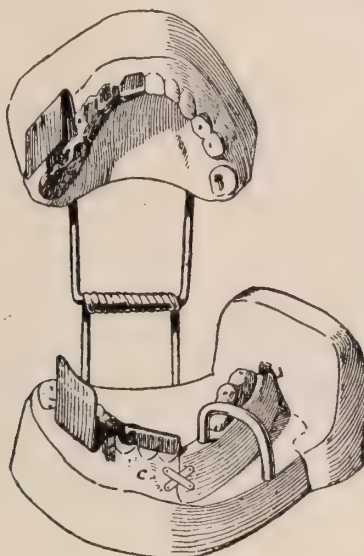


Fig. 3.

Fig. 3—Temporary mandibular apparatus fixed to the bone, according to Martin's method with two crossed metallic extensions

space for the resection, which in this case, as I have already said, ought to be made between the cuspid and the left lower lateral incisor, I avoid screwing crossway, as has been done till now by Martin, the two bands in the bone for the maintaining of the temporary artificial jaw bone.

For this new method of fixation of the temporary substitution appliance this must be constructed all of one piece, the alveolar included (see Fig. 2.A), which with Martin's method was made removable and went under the name of "added piece" (Figs. 4 and 5). In this way the temporary artificial apparatus for the substitution of the portion of lower jaw to be resected shall be about one inch and a half high from its occlusal surface to the lower edge.

Prof. Alessandri having found the patient in a very serious condition had to act immediately and on the 13th of July operated his patient according to his own method, carrying away the enormous piece of mandible "ab ore." I immediately applied the vulcanized temporary substitution piece (Fig. 2.A), fixing it to the remaining mandibular stump by means of the rectangular galvanized band screwed on one side to the prosthetic vulcanized piece and on the other screwed with nuts to the two pins of the above

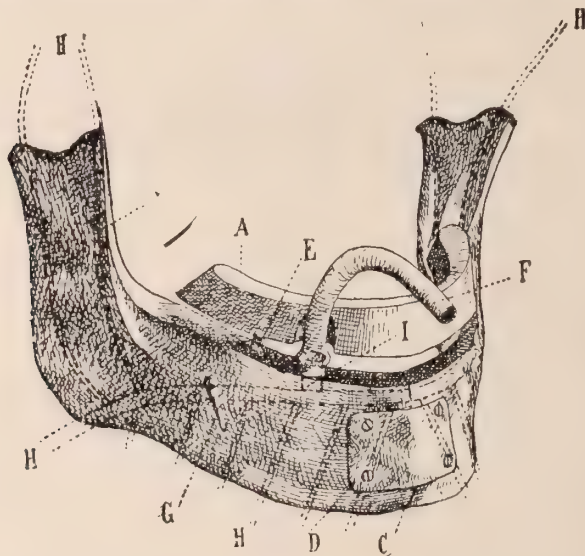


Fig. 4.

Fig. 4—Temporary mandibular prosthetic apparatus according to the method of Dr. Claude Martin with removable portion reproducing the alveolar process. A, removable alveolar portion; E, metal pivot for fixing the alveolar portion piece to the mandibular apparatus; H, lines showing the internal canalization of the apparatus; D, metal plate uniting in C the two portions of the artificial mandible; I, entrance orifice in communication with the canals H; F, metal tube for the introduction of antiseptic solutions in the canals; G, swivels.

mentioned extension band, soldered labially to the shell crowns capping piece (Fig. 2.). Inside this temporary vulcanite apparatus, which reproduced normally on its dimensions the lost portion of the jaw, a longitudinal canal was made communicating with a series of smaller transverse openings leading to the external surface of the apparatus (Fig. 2.c.). In one of the transverse tubes, larger than the others, opening on the occlusal surface of the apparatus on the region of the right cuspid, was inserted a curved metal tube (Fig. 2.B) leading outside the lips so as to attach a rubber tube.

through which frequent antiseptic irrigations were to be made in the extensive wound, which in this case is left opened, as it remains after the operation and on which lies down the temporary prosthetic apparatus.

Prof. Alessandri performed the resection of the mandible on the 13th of July, 1911, under chloroform, having regard to my wish that the patient should not be operated by the external method, but by *ab ore* method; not so much to facilitate the applying of the



Fig. 5.

Fig. 5—Added alveolar portion constructed for an artificial, complete temporary mandible, according to the method of Dr. C. Martin.

prosthesis, but so as to avoid a long external scar, which would have permanently deformed the face of the patient. Prof. Alessandri made a small incision in the left part of the submental region, and a similar one half way up behind the right ascending ramus so as to enable Gigli's chain-saw to pass. He sawed the jaw bone distally to the left lateral incisor and nearly one-half inch high from the lower border of the right ramus of the mandible, comprising in the excised portion some healthy bone on each side. He removed rapidly the piece "*per ore*" cutting in front on the labio-gingival junction and behind on the mucous membrane of the mouth floor, also detaching the muscular insertions. The wound of the mucous membrane was plugged and partly stitched.

Excepting a piece of sound bone on each side, the rest of the resected portion was deformed (Fig. 6); the bone had thickened and the tumor had developed more to the front, destroying in great part the anterior cortical tissues and protruding in the shape of an irregular fleshy mass some parts infiltrated with blood and also partly degenerated.

Histologically this typical sarcoma was formed by polymorphous cells mostly of fuso-cellular type and of numerous giant polymorphous cells.

During the operation I noticed that the wings were no obstacle

to the application of the mouth-gag and in spite of the pressure used the shell crowns capping piece remained well cemented.

The disinfection of the operated part during the convalescence of the patient was performed many times a day by introducing the antiseptic solution under pressure in the rubber tube by an irrigation syringe with rings; the antiseptic solution penetrated in the longitudinal tube of the temporary appliance and came out under great pressure from the numerous orifices of the small transversal openings spreading over the mucous membrane of the oral cavity



Fig. 6.

Fig. 6—Portion of mandible resected for sarcomatous tumor.

before coming out from the mouth. Whilst the tissues were healing round the temporary artificial apparatus, the distal part of this remained embedded about one inch deep in a niche of connecting tissue of new formation. But on the 5th of August, that is to say, three weeks after the operation, I observed that the tissues of the healing niche were retracting, trying to expel the mandibular vulcanite appliance, which was being raised and was pressing on the free margin of the remaining mandibular stump, wounding its surface and causing great pain to the patient; thus I was forced to cut off about an inch of the part that was proximal to the bony stump.

Having noticed in other similar cases that the shrinking of the catricial tissue in big wounds after resections of the jaw bone always continues, in spite of temporary appliances made in vulcanite, and that one is continually obliged to reduce the length of the temporary appliance and also afterwards of the permanent one, to prevent the pain of which the patient complains and to avoid this inconvenience I thought out a more secure and more efficient method than these appliances for counteracting the shrinking of wounds. I succeeded



Fig. 7.

Fig. 7.—Permanent mandibular appliance made of cast tin with the gingival portion of pink vulcanite and with porcelain teeth.

by substituting to the vulcanite appliance another appliance, also temporary, but of heavy metal, so that its weight could win the continual contraction exercised by the soft healing tissues. I applied this apparatus on the 16th of August, that is to say, a month after the operation. It was made of tin and weighed nearly one pound. This appliance did its work beautifully and on the 2nd of October, two months and a half after the operation, I was able to apply the permanent artificial mandible, following the method which has given me very good results in a preceding case on a patient also operated by Prof. Alessandri (1) (Fig. 7).

Once this permanent apparatus applied I took off the two shell crowns capping piece with retaining wings.

This new permanent appliance of mandibular prosthesis is very simple, as simple as the idea that has helped me to construct it.

Having noticed that in using heavy blocks of tin for the distension of cicatrices, owing to their heaviness, they remained in the same place, without shifting, during the movements in the mouth, I thought that if I could construct in the same way the

(1) R. Alessandri and A. Chiavaro "Resezione e protesi mandibolare" Bull. of the Royal Medical Academy of Rome, year XXXVII Book I-IV 1911.

permanent mandibular prosthetic appliance, I should be able to eliminate the attachments, which are never efficient, are always in the way and often give pain.

In cases of resection of the lower jaw bone as retention of the permanent prosthetic appliances Dr. Claude Martin advises the fixing of a sharp metal point at the free extremity of the prosthetic appliance, which will be in contact with the resected surface of the mandibular bone, where the metal point was to penetrate. He also

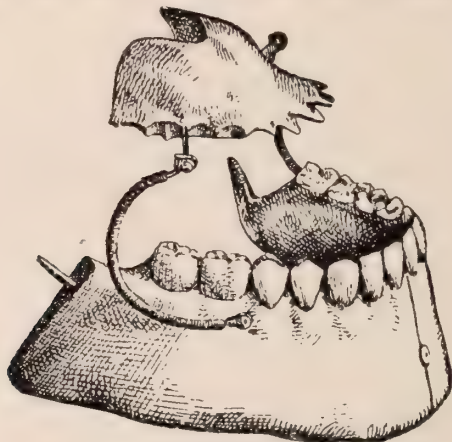


Fig. 8.

Fig. 8.—Permanent mandibular prosthesis, constructed of vulcanite according to the method of Dr. Claude Martin and with the means of retention he has advised.

advises the appliance of spiral springs working on the lower part on the mandibular appliance and on the upper part to a metal extension, which crossing the interdental space between two posterior upper teeth, joins a specially made upper plate for the palate. It is not necessary to point out the many inconveniences of such means of retention. In Fig. 8, which I take from Martin's work, "*De la prothèse immédiate appliquée à la résection des maxillaires*" one can see the means of retention used by him and which are no longer necessary with the method of the permanent heavy appliances.

For the making of heavy temporary and permanent appliances I proceed in the following manner:

I take at the same time the impression of the mandibular portion which has remained after the resection and of the cavity resulting in the place of the amputated portion of the mandible. But as this cavity is very deep, it would be impossible to take out of the

mouth the impression all in one piece; thus I begin by filling with modelling compound this cavity up to the level of the lower remaining teeth, I wait till the material is hard and leaving it in place I take a plaster impression with a lower impression tray just as though the lower maxillary were complete. When the impression tray is withdrawn with the plaster impression, I also remove the paste that has served to take the impression of the cavity and I place it "in situ" on the plaster impression. I then take an impression of the upper jaw, and then in wax, the bite. I run the models from the impressions fit these on the bite, and mount the whole on the anatomical articulator. I make in wax a model in the cavity in the lower model, of the block that I wish to obtain in metal, making it wide at the bottom and narrowing gradually towards the alveolar portion. These appliances are bound to keep with the alveolar portion higher on account of the weight and the size of their base. Something like the toys irreversible, which owing to the lead at their base, they will always turn up, no matter what position one may try to put them in.

In cases in which the block must serve to stretch the scar tissues I model it in wax in such a way that the upper surface remains on a somewhat higher level respecting the occlusal surfaces of the teeth remaining on the mandibular stump; and leaving it in its place in the cavity of the model I close the articulator, obtaining thus on the occlusal face of the upper block the impression of the masticating surface of the corresponding upper teeth (Fig. 9 and 10). I then finish it off with a wax spatula.

If instead the block to be constructed must be used as a permanent prosthetic mandibular appliance, that is to say, when it is to be fitted with teeth and gums, I model the base in the same way I have described for the block which must serve to extend the cicatricial tissue but with reference to its height I make the occlusal face reach half to three quarters of an inch beneath the gingival margin of the teeth which are in the remaining mandibular portion and on this surface I make a few undercuts which will serve as retention of the rubber with which I will reproduce the gums and fix the artificial teeth. The permanent prosthetic appliance is then lighter than the block made for the extension of the cicatricial tissue. If the appliance thus built should be considered too heavy, because it is observed that it continues to stretch the soft tissues, its

weight can be easily reduced by filing the quantity of tin that is necessary to lighten and polish the filed part.

For the casting of the metal block I make the mould in the following way:

I put the wax model half way up in a mixed plaster of Paris, which I make nearly two inches thick and of rectangular form, so that from the margin of the wax model to each of the four sides of the plaster block there should be a distance of nearly two inches. I wait till the plaster sets and shape with the plaster knife the upper surface, on which I make at the four angles four small holes, which will serve as a key to the mould; I then paint it with olive oil, then I pour on it another mass of plaster, to which I give the same external shape and the same thickness. When this second portion of plaster is hard I divide the two halves, I take away the wax from the model with hot water and I excavate on the surface of one-half of the plaster mould a "sprue," which starting from one of the extremities of the impression left by the wax model reaches nearly one inch from one angle to the edge of one of the longer sides of the mould. On the same side of the same half of the mould I cut another similar sprue, which starting from the other extremity of the impression reaches about one inch from the other angle on the same side of the mould. I cut on the other half of the mould two other similar sprues. Joining the two halves of the mould, I get two cylindrical channels which can be either parallel or diverging. They could also be obtained before pouring the plaster by adding to the two extremities of the wax models two cylinders also of wax, one-quarter inch diameter. One of these channels serves to pour the metal, and the other simply as a sprue, thus allowing the air to come out. With the point of a knife I fashion as a funnel the external opening for pouring the metal. When all the marginal angles and edges of the plaster mould are filed and rounded I join the two halves. The keys made by the four small holes correspond in the other half to four lumps which fit into them. I bind the two halves of the mould with a piece of soft wire, I then dry it on a gas stove or any other stove, and when the plaster is *completely dry* and well hot, I melt the tin and pour it into one of the sprues of the mould, until I see the tin appear in the other sprue. When the whole is cooled down, I open the two halves of the mould, cut away from the block of metal, thus obtained, the two cylinders and finish the piece; first

with a file, then with emery paper, polishing with a hard brush and pumice powder, and lastly with a soft brush and precipitated chalk.

If the block of tin is destined to stretch out cicatricial tissues it is thus ready for use (Figs. 9 and 10).

If instead the block of tin has been devised for a prosthetic permanent mandibular appliance, I place it on the model of the lower jaw, I mould with wax on its occlusal surface, prepared with ap-



Fig. 9.

Fig. 9—Metal block for the distension of cicatricial tissues; vestibular aspect.



Fig. 10.

Fig. 10—The same block as Fig. 9, occlusal aspect.

propriate undercuts the gum portion, on which I set the teeth up, so that they articulate physiologically with the corresponding upper ones; I try in the mouth and vulcanise with pink rubber like an ordinary set.

If in future I shall have occasion to lend my assistance in cases of resection or of partial resectis—disarticulation of the mandible, I shall not immediately apply the temporary vulcanite apparatus, but after I have got the dental system in hygienic conditions and after applying the shell crowns capping piece with wings of retention a

few days before the operation, if possible, I shall wait for the wound to begin healing with the ordinary surgical treatment. When the wound has entered the phasis of regeneration, before a proper cicatrix is formed and the deeper portions of the wound begin filling up, I shall take the necessary impressions and shall construct a heavy permanent appliance made of tin, with teeth set in pink rubber as I have described. Once this permanent apparatus is applied, I will take off the crowns capping piece with wings of retention and I will advise the patient to keep always the remaining teeth of lower jaw in contact with the corresponding ones of the upper jaw, keeping them closed also when talking and during sleep, getting into the habit of sleeping on the side corresponding to the remaining stump of the mandible. If the patient does not succeed in maintaining the teeth closed during sleep, some means will be found to force the teeth to remain joined, as for instance a bandage, an occipito mental strap, stripes of sticking plaster applied from the basis of the nose to the region under the chin, etc., etc.

In cases of complete disarticulation of the mandible I recognize the utility of the immediate temporary prosthetic appliance made in vulcanite, which like a rigid arch serves admirably to sustain not only the soft tissues but also the tongue, the basis of which will be tied with a thick silk thread to the chin region of the apparatus until cicatricial tissue is formed. After the cicatrization of the tissues, instead of applying a permanent vulcanite appliance, as has been done till now, I think that one could obtain better results by making a permanent appliance in tin, with the teeth fixed in vulcanite and reproducing with the apparatus only the horizontal portion of the mandible, doing away with the two ascending portions.

In conclusion, I believe that the use of a heavy permanent mandibular prosthetic appliance, whilst more simple than the preceding ones used till now, represents the following advantages in cases of *resection* and *unilateral resectio-disarticulation* of the mandible:

1. Abolition of the immediate temporary vulcanite appliance, which during the cicatrization does not offer the requisite resistance to the shrinking of the tissues, is pushed upwards from the floor of the mouth and pressed against the remaining bony stump, irritating it, producing painful sores and obliging the operator to be constantly reducing the appliance.

II. Abolition of the retaining wings after application of the heavy piece of a permanent prosthetic mandibular apparatus. The retention wings had always been in the way during mastication, hindering lateral movements, which are of great importance in mastication of the food.

III. The weight and shape of the new permanent appliance devised serve to balance the shrinking of the soft tissues of the cicatrix, abolishing the means of retention, which render mastication and pronunciation difficult, causing also inflammation and irritation of the tissues.

In cases of mandibular disarticulation the use of heavy permanent appliance has the following advantages:

I. Abolition of the ascending portions in the permanent apparatus. These are a cause of painful irritation by the continual pressure which they exercise in the glenoid fossae at the basis of the cranium a pressure which increases continually on account of the constant retraction of cicatricial tissue on the floor of the mouth.

II. Abolition of the spring retaining plate over the palate, as the tin apparatus remains in place by its great weight and the special shape without needing any other retention.

The last, but not the least, advantage of this new method, which could be called "*secondary preconsus mandibular prosthesis*," is that being applied after the healing of the wound, the surgeons will not any more fear that the prosthetical appliance could be the cause of reproduction of the tumor.

SCARLET RED AND THE FILLING OF PATHOLOGICAL BONE CAVITIES APPLIED TO DENTISTRY.*

BY DR. ANGELO CHIAVARO, ROME, ITALY.

In young subjects it is not rare to come across cases of crown-fractures from traumatic causes in permanent teeth with roots not fully formed, and the greater number of these cases are found in the upper incisors, owing to their shape and position.

When a violent blow entails the loss of a large part of the crown, seriously damaging the pulp tissue and causing its death, if the formation of the root tissues was not ended, it stops and the

*Read before the American Dental Society of Europe.

root remains at the formative stage in which it was at the time when the fracture occurred; the margins of the hard tissues at the free extremity of the root remain as they are; that is to say thin and sharp and the opening of the pulp cavity remains wide and gaping, having the shape of a funnel.

As in the gradual formation of root tissues, the formation of the cement precedes that of the underlying dentin, the result is that as the root gradually advances, its margins appear very sharp until the apex is perfectly formed, because the strata of dentin already calcified in the coronal region of the root are fewer in the apical region in formation, and consequently the pulp cavity which in the normal tooth is occupied by the vital pulp is wider than the space it occupies in the perfectly formed roots.

One understands easily that if under such conditions the death of the pulp tissue occurs and infection follows, the septic process rapidly extends in the alveolar region with which the pulp so directly communicates and even if it is possible to thoroughly disinfect the root canal and the infected region or even if, taking it in time, it is possible to avoid the infection, the filling of the root canal presents in these cases great difficulties, because if one does not take special precautions the filling material passes through the root canal, irritating the peri-apical tissues predisposing them thus to infection, which always brings on abscesses and fistulae.

I recently cured a case of this kind by using a remedy which I do not think anybody else has yet used in dentistry: Scarlet red: and filling the two abscess cavities which existed in this case, with a paste similar to that prescribed by Mosetig and modified by Mayrhofer for the filling of diseased bone cavities. As the scarlet red, as well as the filling paste fulfilled my expectations, giving excellent results and since it is possible to use it in dentistry in other cases. I believe a brief description of the case and of the method of treatment which I adopted may be interesting to my colleagues.

The patient was a young woman of twenty, who at the age of eight, fractured, in consequence of a fall, the crowns of her two upper central incisors. Of the two crowns there scarcely remained a third in length. When the young lady came to me the two teeth, of a darkish color, were filled with cement and on the gum somewhat under their apical region, two fistulous openings were discharging. The lady related that after the fracture a very painful

abscess manifested itself; that she had been taken to a dentist who had cured the abscess and had filled the two teeth; but that soon after the abscess had again formed; another dentist having to repeat the treatment and fill the teeth with another kind of stopping; these alternatives of abscesses and treatment had been repeated many times; till at last two permanent fistulous openings had formed resisting all treatment. The lady still suffered now and then some slight inconvenience but having no longer the violent pain caused by the abscess did not apply for any further dental treatment until she came to me, being perhaps more concerned with the ugly appearance of the two fractured crowns than with the two fistulae and the pus that came from them.

So much for the history of the case. The anatomical and pathological conditions can easily be imagined; the fracture of part of the two central crowns having taken place when the patient was only eight years old, the roots of the two teeth were naturally not complete and had reached about one-half of their normal length, the root canal consequently opening into the alveolar tissue through a large orifice; the pulp chamber remained exposed in both teeth, or covered by a thin stratum of dentin unable to protect it; soon the pulp tissue got necrosed and infected, abscess upon abscess following. The dentists who successively attended the patient, did not consider, perhaps, that on account of the special anatomical conditions of the roots they ought to have acted otherwise also in regard to the fillings; it is certain that some particles of the plastic materials that they used for filling the teeth (gutta percha, cement, amalgam) passed beyond the roots in the abscess cavities, where by their presence they certainly caused continual irritation of the tissue, preventing the formation of new tissue within the alveolar cavity and keeping up the infection.

It was anything but easy to remove all these hard particles from the abscess pockets; but with patience and after several attempts, I succeeded in extracting them, partly through the root canal and partly through the fistulous openings, which I enlarged with the point of a lancet.

At that time I was completing some studies and experiments on the "scarlet red" and I thought that it could be useful in this case. I introduced an eight per cent ointment of scarlet red in the abscess cavities, filling them completely, to make sure that the whole surface

of the cavity be in contact with the remedy: I washed each root canal with an antiseptic and sealed the pulp cavities with gutta percha. I renewed the dressing every twenty-four hours and in



Fig. 1.

less than a week I found that the fistulae were healed. I continued the dressings for a few days longer and when I was sure that both

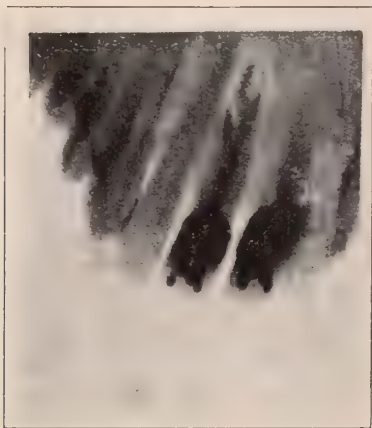


Fig. 2.



Fig. 3.

root canals were really disinfected I proceeded to the filling of the two abscess cavities with the paste prescribed by Mayrhofer, replacing however the iodoform by vioform. The canals of the two

roots were pretty wide all along and I could thus easily introduce the paste with small hand instruments, pressing with little cotton pellets without having to resort to other means. With this filling material I filled also almost completely the root canals themselves and finished externally with cement temporary stopping.

After three weeks the cicatrization of the fistulae continuing, I took out the temporary filling and almost all the paste from the root canals, without however reaching their wide opening. Having amputated what remained of the two crowns and properly prepared the roots, I made two artificial dowel-crowns in porcelain and platina, restricting the length of the dowel so that in each of the two roots it could not reach the apical opening. In this way the last bit of the root-canal remained filled with the paste which prevented the cement from penetrating beyond the apical opening when I cemented the two artificial crowns. I had in this way the satisfaction of doing a work which was not only pleasing from an esthetic point of view, but of obtaining to my great satisfaction a perfect and permanent cure of the two fistulous openings (as I was able to verify six months after the application of the two artificial crowns, together with Dr. Crescenzo Esdra, who at my request kindly took several radiographs of the two roots).

By the three radiographs reproduced in the adjoined pictures one can see distinctly that the roots are only partly formed and that they end in a funnel-shaped opening in the alveolar tissue; the dowel and the platina backing of the two artificial crowns are very distinctly shown. Now these have been in their place for about one year and in the corresponding gingival tissue there is not the least sign of the fistulae reproducing themselves.

To more clearly explain what I have stated I think it well to describe more amply the nature of this scarlet red and to speak of the filling of pathological bone cavities.

Scarlet-red has been in use for some years¹ for histomicroscopical preparations as a coloring substance for fatty compounds; it was just during these histological researches that Dr. B. Fischer in 1906 discovered the power that scarlet red has of inducing an active proliferation of the epithelium. Having injected a few drops

(1) The scarlet-red (amido-azo-toluol-azo-beta-naftol) is a powder of a deep red colour, inert, insoluble in water and glycerine, slightly soluble in Nilol, soluble especially if heated in alcohol, in chloroform, in many organic solvents, in phenols, in oils and fatty substances.

of olive oil saturated with scarlet red under the skin of a rabbit's ear, he noticed that in the injected region neopithelial formations were developing, which he thought had some analogy with cutaneous carcinomas. Having repeated the experiments he published the results, since when many other students have conducted and published experimental researches on scarlet red showing that these neo epithelial formations induced by the scarlet red can never degenerate into carcinomas of the skin. Dr. Schmieden in 1908 was the first to apply this remedy therapeutically, obtaining excellent results in cases of ulcers and torbid sores, so as to promote the rapid formation of a protective cutaneous epithelium.

After him many doctors have adopted scarlet red in their own practice and the new remedy has proved very efficacious for the epithelization of septic and aseptic wounds in general surgery, in dermatology, gynecology, otology, and nose, throat and ear treatment.

Scarlet red acts as a stimulant on the cells, bringing on neoformations of tissue. Thus one induces the formation of new epithelium on sores, wounds, ulcers and until the present, no general or local toxic reaction has been noted, even after prolonged application. Moreover I know from unpublished experiments that it has even been given by mouth to patients and animals in large doses, without any toxic effect.

If in some cases there has been a hyperproduction of tissue, the superfluous portion of tissue soon disappears after the use of this medicament has been discontinued.

Scarlet red is used as an ointment or in solution in oil. To obtain the ointment one must mix from four to eight parts of scarlet red to a hundred parts of very pure vaseline, or to fifty parts of lanoline with fifty of vaseline. The solution in oil is made in the same proportion or till saturation in olive oil, or in vaseline oil. Some advise dissolving first the scarlet red in a little chloroform, then mixing the whole with the fatty substance.

Dr. E. Hayward suggests the use of amidoazotoluol, instead of the scarlet red, which is amido-azoto-luolo-azo-beta-naftol.

Amido-azo-toluol is a derivate of scarlet red and (according to Hayward) is its active principle, possessing therefore to a higher degree the specific action of exciting epithelial granulations. It is possible to obtain with it in a very short time a solid and resisting

epithelial layer, whilst the stimulation which it exercises on the cells is not too great, it also being almost free from coloring matter.

The Firm of Kalle of Biebrich, the principal producer of the scarlet red and its compounds has recently put on the market two preparations sold under the name of *Pellidol* and *Azodolen*.

Pellidol is a substance very similar to the amidoazotoluol and, like the latter and scarlet red, is completely soluble in oils and fats.

Azodolen is a compound of Pellidol with a preparation of iodo-albumin; therefore unites with an epitheliomatous action the anti-septic power of iodine.

Both Azodolen and Pellidol are used as ointments in two per cent solutions. Their color is very similar to that of the skin and they do not dye the tissues on which they are applied, or linen, as scarlet red does.

Having read about many prompt and permanent recoveries obtained with scarlet red and its derivatives I thought it would be possible to make use of this new remedy also in dentistry for the rapid healing of cutaneous and gingival fistulae, which heal with difficulty with the usual medicaments, on account of the great loss of tissue caused by abscesses. It might also be useful in hastening the healing of labial or oral ulcerations.

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Bone-plugging¹ or the filling with medically active or inert substances of pathological bone cavities which have formed in the depth of the bone after some disease which has destroyed the tissue, or after any serious surgical handling, is an operation which in general surgery is done with a diagnostic view or for the cure of abscess cavities and in dentistry it may be applied in many cases and be

(1) Germans use the term *plombe* (filling) for the filling of dental cavities as well as for the plugging of bone cavities, whatever substance be used. The English and American authors have also adopted the term *plombe* for the filling of diseased bone cavities.

very useful: it may be used after the amputation of the apex of a root, in cases of blind dental alveolar abscesses or of an abscess with fistulous opening; in diseased cavities of the maxillary bones resulting from necrosis, and in some cases of alveolo-dental pyorrhea. Some advise it even in cases of chronic empyema of the antrum of Highmore.

The substances used in general surgery for the plugging of bone cavities may be divided in *non-absorbable* and *absorbable* materials. The latter again in *autoplastic* (particles of fat and muscle) and *heteroplastic*.

Mosetig advises the use of heteroplastic substances, easily absorbable and solid, but which may be introduced even whilst liquid in the bone cavities so as to penetrate in the smallest hollow places that are apt to remain after a surgical operation and after reabsorption of a portion of bone.

The Mosetig-Moorhof method modified by Mayrhofer, ought to be the preferred method for dentistry, on account of its simplicity, its ease of application and for the excellent results obtained by it, confirmed not only by many experiments, but also by the numerous recoveries obtained.

All formulae of heteroplastic substances suggested for bone plugging are composed of a basal oily substance mixed with strongly antiseptic substances.

The original formula of Mosetig is as follows:

R. Oil of sesame, spermaceti in equal parts.

Put in bottle and dissolve by placing in bath of hot water, filter, sterilize in bath of boiling water, then pour 60 grams of this mixture, whilst it is still warm and liquid, in a wide necked bottle, previously well dried, containing 40 grams of finely pulverized iodoform; then shake until you obtain a hard, homogeneous mass.

This formula, used in general surgery, was modified for dental use by Mayrhofer to the following.

R. Spermaceti, 30 parts; oil of sesame, 15 parts; iodoform, 10 parts.

With these preparations one obtains a more consistent paste, which remains longer in situ, being less absorbable.

Since the odor of iodoform is so disagreeable and as we have so many scentless iodic compounds with the same and perhaps even greater antiseptic power, we may use instead one of these, such as eucrophen, vioform, aristol, etc.

I prefer the vioform and this is the prescription which I use:

R. Spermaceti, 30 parts; olei sesami, 15 parts; vioformi, 10 parts.

I dissolve the spermaceti and mix the three substances in a small bottle placed in a bath of hot water. I do not filter, but I leave the mixture in the same bottle, where it keeps well. When I want it I sterilize again in a bath of hot water and use it while in pasty consistence.

The filling paste can be preserved for a considerable time if kept in small, well-corked bottles, in test tubes or in collapsible tin tubes. When the paste is to be used, one warms it over hot water in its receptacle until it is almost liquid; it is then ready for use.

A different paste, also made up with oily substances and anti-septics, was suggested and used in general surgery by Dr. Emil G. Beck and has been applied in dentistry by his brother, Dr. Rudolph Beck. This paste, a mixture of subnitrate of bismuth and vaseline, was first used by Dr. Emil G. Beck and by his brothers, Drs. Charles and Joseph Beck, for diagnostic purposes in cases of fistulous sinuses of uncertain origin. By injecting the liquified mixture in the opening of the fistula and being sure that the whole sinus and the abscess cavity or cavities from which the fistula proceeds are filled, any radiograph of the region taken afterwards shows the bismuth paste darker than the other parts of the picture; thus determining exactly the course of the fistula, the real position and the size of the abscess cavity, the possible presence of sequestra, etc. . . . It was the first application of this diagnostic method in a patient that gave Drs. Beck the idea of a possible therapeutic application of their method; having noticed that instead of bad results or an infection coming on, as they feared, the injection of bismuth paste was followed by a cessation of pusflow and the closing of the fistulous opening.

The formula used by Drs. Beck for diagnostic purposes is as follows:

R. Bismuth subnitrate (free from arsenic), 33 parts; vaseline (yellow or white), 67 parts.

Let the vaseline boil in an enamelled pan and whilst stirring add the powder of bismuth before the vaseline gets cold.

The same formula is recommended by Dr. Rudolph Beck for the treatment of empyema of the antrum; whilst for the cure of alveolo dental pyorrhea, of chronic fistulae and abscesses, he ad-

vises the following preparation, the one adopted by his brothers for general surgery and for therapeutic purposes:

R. Subnitrate of bismuth, 30 parts; white wax, 5 parts; paraffine, 5 parts; vaseline, 60 parts.

Dr. E. Beck contraindicates the use of bismuth paste in acute suppurations.

Bismuth paste is very greatly recommended by Dr. Warner in dentistry; and by some surgeons also for general surgery. Others instead object strongly to its use. The paraffine and the vaseline (the basic substances of this paste) being minerals, are not absorbed by the tissues and therefore are used as cosmetics in general surgery; whilst in dentistry it is necessary to use substances that can be absorbed so that the basic materials of the paste must be animal or vegetable fats and oils. Subnitrate of bismuth, so large a constituent of Beck's paste, is absorbable, and though it has no greater bactericidal power than the iodic preparations, may bring on a serious poisoning of the system, manifesting itself in the shape of ulcers of the oral mucous membrane, by head-aches, nausea, diarrhoea, necrosis of the bone, and may even lead to the death of the patient.

To these objections Dr. E. G. Beck replies that the toxic effects can be prevented or neutralized at their first appearance by leaving the bismuth paste only a short time in large natural cavities (stomach, sinuses, etc.); or in the pathologic cavities (abscesses or cavities resulting from the removal of sequestra and other surgical operations) or by removing the paste from the cavities as soon as the first symptoms of poisoning show themselves. To remove the paste from cavities, inject in the cavity warm, sterilized olive oil, leaving it for twelve or twenty-four hours, so as to form an emulsion within the cavity, then draw it out with a syringe.

Dr. E. Beck advises one not to attempt the removal of the paste from the cavity with excavators or similar instruments, for new orifices might be opened and the poison be absorbed.

My opinion is that the Mavrhofer paste is advisable in dentistry, but I replace iodoform by vioform.

The "technique" in filling bone cavities varies according to cases. The cavity to be filled must, in every case be absolutely dry. When the cavity has a wide opening externally, it may be dried out with swabs of gauze, leaving the dry swab in place till the paste is introduced.

When the external opening of the cavity is very small, the drying is accomplished by the hot air blast.

The cavity must be completely filled with the paste, so that between the walls of the cavity and the paste, as well as in the mass of paste itself there should be no air whatever left.

When the bone cavity is sufficiently opened externally the paste should be used in a semi-solid state and is introduced in the cavity by means of a wax spatula or with a small pointed instrument, pressing on the paste as it is pushed in gradually by means of little pellets of gauze or with the warm point of a burnisher. If the cavity thus filled is the result of the amputation of a root apex or of any other operation requiring the detachment of a bit of periosteum or of mucous tissue, the plug is covered by the detached portion of soft tissue. Some advise suturing up this flap but usually, being of small proportions, it is not necessary, for the pressure of the lips and cheeks is sufficient to keep it in place.

If the cavity to be filled presents a very small external opening, or if it is not easily accessible, it is necessary to use a syringe for the introduction of the paste. If anyone wishes a special syringe, I should recommend the one of Dr. Böhm, which has several spare tubes. These can be introduced in root canals or in external openings of abscesses and fistulous openings, whatever be their position. The paste comes out uniformly, filling the minutest spaces and every corner which by other means would be inaccessible.

Dr. Beck advises one to use a metal syringe or a collapsible tin tube with a flexible outlet terminating in a silver nozzle.

I think one can get as good results by means of a good dental syringe with changeable needle carriers to be screwed on, instead of slip joint needle tubes. According to the position of the pathological bone cavity that must be filled, a flexible tube made on purpose with a very thin, blunt point may be attached. Fill the syringe with a little more paste than is necessary, not liquid but semi-solid. Kneading and working it (to facilitate its introduction) to the shape of a little roll. Then you press gently on the piston of the syringe until you see the paste appear on the end of the tube. Slip on the nozzle another little tube of rubber or a little piece of gutta-percha, so as to prevent the air from passing between the tube and the cavity to be filled. In the case of an alveolo dental abscess cavity with fistulous opening, introduce the point of the tube into the root canal by which the abscess is caused and press slowly on the piston of the

syringe until you see the paste appear at the orifice of the fistulous sinus. The root canal is sealed with temporary stopping and if you have reason to suppose that the cavity is not completely filled or that the paste has been too rapidly absorbed, repeat the operation a few days later.

In cases of blind abscesses or of other cavities with a single opening, the introduction of the paste must be stopped as soon as the patient feels that the tissues are extending; but the injection may be repeated after twenty-four hours if one is in doubt about the cavity having been completely filled.

For the treatment of alveolo dental pyorrhea it is also necessary to use a syringe: introduce the point of the tube in each pus pocket, injecting the paste as deeply as possible, so as to reach the farthest points where alveolar destruction has occurred.

Cases in which bone-filling paste may be very useful and which I believe have not yet been foreseen by the few dentists who have studied this subject before me, are those of perforation of the pulp cavity. Everybody realizes the difficulties in the way of filling a tooth with a perforated pulp cavity or a perforated root canal and how many methods, more or less difficult in practice, have been suggested. The pastes generally used in dentistry for the stopping of root canals are irritating; or else, on account of their insufficient consistency, too easily let plastic filling materials pass through the perforation, which, when set, keep up a continual irritation of the tissues with which they lie in contact.

I need not discuss the other methods which have been suggested and adopted for the perforation of pulp cavity.

By this method, that is to say the filling of the whole pulp cavity with *bone-filling paste*, we need have no thought about irritating the peridental tissues and pressure on them; because the paste always keeps in plastic condition. And even if it is introduced in too large quantities in a cavity, it can be absorbed; nor have we to fear that the different plastic materials for filling teeth will be forced through the perforation, for the *bone-filling paste* has enough consistency to avoid this and one can well complete the filling of the cavity with some plastic filling material which may even serve to hold a pivot for an artificial crown.

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THE AWAKENING OF THE DENTAL PROFESSION.

BY EDWARD H. BAKER, B. A., M. D., CHICAGO.

The dental profession, an infant of much more tender age than the medical profession proper, has, like most infants, passed much of its time in sleeping.

But it hasn't neglected to eat heartily at regular intervals, and to grow into a strong, lusty specimen. Its sister professions—Law, the Church, and Medicine—were already old enough to be grandparents and were becoming gray before it was born.

And while the others are now trying to be born again—to adapt themselves to modern ideas—dentistry has the advantage of a real youth and a vigor of growth heretofore unknown. And add to youth and great bodily vigor a favorable environment and suitable advantages of training and education, its possibilities of future growth and usefulness are almost impossible to picture.

The infant shows other early signs of having remarkable qualities. For instance, when that rude Hunter boy awoke the infant by giving it a sudden pinch, instead of howling it responded by placidly opening its blue eyes and looking rather sober, began to move its limbs, because youthful muscles must exercise themselves almost constantly during waking hours in involuntary response to the stimuli of growth.

At the present moment there are indubitable evidences of its having arrived at a period of growth where, besides the impulse to exercise, it is beginning to use its senses to take cognizance of its surroundings, as well as to examine itself and become more and more aware of its own nature.

Since the appearance of Boris Sidis' wonderful boy¹ and one

1. "Bending the Twig. The education of the eleven year old boy (William James Sidis) who lectured before the Harvard Professors on the Fourth Dimension." American Magazine, 69, pp. 690-5, March, 1910, also "Philistine and Genius" by Boris Sidis, N. Y. Moffatt, Yard & Company, 1911.

or two other infant prodigies, as well as the development of the Montessori Method² of education, it has appeared possible that the character of the environment of a little child, the character of its play, its books, etc., are much more important, much more determinative of the kind and degree of future growth than we have hitherto suspected.

In fact, strange as it may seem, it now appears possible that we unwittingly destroy in nearly all our children the possibilities of a mental development far beyond anything we find present in the average person of today. In fact, dissatisfaction with present educational methods is becoming so widespread that it behooves us to give at least a little consideration to the development of dentistry itself, which is so evidently about to enter upon a new and radical change of existence.³

And just as in the case of a child exhibiting unusual possibilities of growth and development, we should now consider carefully the environment and educational training the dental profession shall receive, if not for its own benefit, at least for the benefit of the world of tomorrow, upon which it is destined to exert such an important influence, not only regarding the health, longevity and physical efficiency of mankind, but also intellectually and socially. For the dentist of tomorrow, in his role as a health teacher, will come into more frequent everyday contact with patients and even into a closer position as family confidant, than does the physician of today.

2. "The Montessori Method" by Maria Montessori, English transl. from the Italian by Anne E. George, N. Y. F. A. Stokes Company, 1912. For popular accounts see:

"An Educational Wonder Worker, the Methods of Maria Montessori" by Josephine Tozier, McClure's Magazine 37, May, 1911, pp. 3-9.

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3. "The Relation of Mouth Conditions to Bodily Health—What the Dental Profession Needs," by E. H. Baker, DENTAL REVIEW, 26, 3, March, 1912, pp. 278-292.

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"The Evolution of Dentistry," E. H. Baker, Address before Ill. State Dental Society, May 15, 1912, DENTAL REVIEW, 26, 11, November, 1912, pp. 1081-1100 and 1113.

"The Natural Field of Dentistry," E. H. Baker, *Dental Cosmos*, 54, 6, June, 1912, pp. 694-702.

The physician of today knows of physical (and mental) woes *after* they have happened; but the dentist of tomorrow will know of them *before* they have happened.

For such will be the office of a great Health Teacher who works with the beginnings of disease rather than officiating with the last sad (and hurried) administrations which attend the great final catastrophe of life——

Here, then, is the dentist of today, wondering how the worm can turn into a butterfly. How is the chrysalis going to acquire its wings?

Many of the most prominent workers in the dental profession, watching the slow, worm-like, class movements, the lack of interest in aërial things, are very pessimistic in their views as to the likelihood of the dentist seriously taking any interest in study classes; doubtful of the great mass of the profession becoming learned; of their acquiring a scientific spirit, and interesting themselves in scientific research work.

In fact, take any dentist who spends a long hard day, working for long hours at the chair, often in a position which almost implies tying oneself into a bow-knot, over patients whose irritable nervous condition adds to the fatigue of the overworked operator. Such a man can hardly be expected to joyfully rush to the evening class room and study physiological chemistry and microscopical work, and then spend his spare time reading the deepest scientific books, or eagerly make tests for scientific research work. It does seem an impossible picture, doesn't it?

But let us see. How did the Boris Sidis baby acquire its wonderful power of mental growth? How do the Montessori pupils get their remarkable mental and physical qualities?

The time factor.

“There is a tide in the affairs of men,
Which, taken at the flood leads on to fortune;
Omitted, all the voyage of their life
Is bound in shallows and in miseries.
On such a full sea are we now afloat,
And we must take the current when it serves,
Or lose our ventures.”

Shakespeare, *Julius Caesar*, Act 4, 3.

Education and developmental capacity depend upon interest—
interest aroused at the right time.

And interest depends upon recognizing the relationship which exists between different spheres of knowledge.

The multiplication table may be abhorrent to many children of the well-to-do who have access to well-filled libraries, while it will be studied with eagerness by a poor apprentice who works late by candle light to acquire a knowledge which he sees will lead to his bettering his condition.

I knew a poor boy of humble parentage who became first a blacksmith, then a machinist, then acquired an education, studied law, and became a great patent lawyer. He was never satisfied to rest in an inferior position, because he reasoned out how he could better his condition.

Probably most people lack the reasoning ability of this boy which enabled him, unaided, to see the relation of cause and effect in regard to his condition in life. But most people are able to perceive the fact when it is pointed out to them.

The phenomenal success of the International Correspondence Schools and other such institutions, which have amassed millions through correspondence courses, depends upon the ability of a large number of people to recognize this relation of cause and effect.

And not only will the dentist recognize the advantages in increased wealth and social position which will accrue to him when he enlarges his professional sphere to include *all* of the body, but another wonderful thing is going to happen.

How does the chrysalis acquire its wings?

In other words, how will the dental profession suddenly acquire a taste for the deepest scientific subjects?

For if he once acquires a taste, all will be well. It will be easy to acquire the knowledge, if he only thirsts for it enough.

The question is, how to acquire the *great thirst*.

Let us see. How does a little child learn? It learns by coming in personal contact with things *in a natural way*.

And that's why most systems of education fail. The knowledge is brought to the student and an attempt is made to cram it down his throat, willy-nilly. The proper way would be for the student to approach the knowledge, just as a hungry tramp (with a big thirst) approaches the free lunch counter. It looks good to him.

Now, I have never observed that the dentist had any difficulty in acquiring any knowledge he desires about things that directly concern his work. And it has often aroused my wonder how

quickly and easily some dentist, who, perhaps, possessed only the most rudimentary education, would master a difficult subject. But we see the same fact proven elsewhere, that preliminary education and training is not always the touchstone of knowledge. It has been observed in schools for the most ignorant newsboys and street gamins, that while they might be very dull in study in the ordinary way, yet if you let them work part of the time with their hands, and give them a chance to acquire knowledge associated with their work, they exhibit the most astounding mental precocity.

Thus there seems to be a direct relationship between the activities of the motor areas of the brain and the frontal convolutions (where the reasoning faculties are located), as well as the lateral areas. Prof. G. Stanley Hall, the great psychologist, and president of Clark University, recognizes this fact and speaks of it in his work on "Adolescence."

"The cortical centers for the voluntary muscles extend over most of the lateral psychic zones of the brain, so that their culture is brain building. In a sense they are organs of digestion, for which function they play a very important part."⁴

And the dentist has the great advantage that he works with his hands, as a child does. Whereas most physicians and other professional men work too little with their hands.

Most well-to-do people concentrate their attention largely on *working other peoples' hands* (and feet) to the detriment of their own physical and mental health.

Hence, in the search for knowledge, the dentist will be surprised to find himself equipped with an advantage of whose possession he was unaware.

Now, let us see how this is to work out.

In several papers I have pointed out the necessity for the dental profession to collect and correlate facts regarding the relationship of mouth conditions to bodily disease.

I soon came to the conclusion that the only way to get these facts was to do something which had never been done before, so far as I know.

For this purpose I got up a medical diagnosis much more thorough and extensive than anything which I have ever seen. It

4. "Adolescence" by G. Stanley Hall. Vol. II. p. 131, N. Y., D. Appleton & Company, 1904. 2 vols.

includes a careful, exhaustive physical examination, Blood Examination (both numerical and a differential count of 400 white cells or over), Blood pressure determination, and a very extensive quantitative Urinalysis as well as a Saliva analysis, together with charts and diagrams of the case.

DIAGNOSIS FOR DENTISTS.

Proposed by Dr. E. H. Baker of Chicago.

- I. Brief Resume of Principal Symptoms or Complaint of Patient.
- II. Physical Examination.
 1. Name.
 2. Weight.
 3. Age.
 4. Nourishment and general appearance.
 5. Lymphatics and glandular system (enlarged glands in neck, breast, groin, etc.).
 6. Osseous system (any marked peculiarities of bony structure).
 7. Face and complexion.
 8. Eye, appearance of.
 9. Tongue, appearance of.
 10. Buccal mucous membrane.
 11. Fauces and tonsils.
 12. Soft palate, appearance of.
 13. Thorax:
 - a) Lungs—signs as ascertained by Inspection, Palpation, Percussion, Auscultation.
 - b) Heart.
 - c) Pulse.
 14. Spine.
 15. Abdomen:

Liver Spleen Kidneys Stomach Colon	{	Position and size as determined by Percussion. Auscultatory Percussion, Palpation, Transillumination, X-Ray, etc.
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 16. Nervous System:

Reflexes:

 - a) Muscular.
 - b) Muscle and Tendon.
 - c) Touch.
 - d) Pressure.
 - e) Heat and Cold.
 - f) Pain.
 - g) Bladder and Rectal.
 17. Blood Pressure:

Systolic.
Diastolic.
Mean Pressure.
Pulse Pressure.
- III. Laboratory Analyses.
 - A. Blood.
 - 1) Numerical count (number of red cells, number of white cells).
Amount of Hemoglobin.
 - 2) Differential count. Red cells (varieties and percentages of each kind).
White cells (varieties and percentages of each kind.)

B. Urine:

A careful quantitative urinalysis should be made, much more complete than is ordinarily made.

C. Saliva:

As careful and extensive quantitative estimations as possible should be made.

IV. Brief Report from Dentist.

1. General condition:

- a) Teeth.
- b) Gums.

2. Are there evidences of:

- a) Pyorrhea.
- b) Abscesses.

3. Saliva. Any peculiarities noted.

V. Correlation of Findings.

Sum up the findings.

Show probable relationships between the conditions as found and whether they act as causes or effects.

Show the probable pathologic influence of mouth conditions upon the rest of the body or vice versa.

Some surprising facts immediately began to appear when I started to study mouth conditions in this way.

As a result of my study of the dental situation, I would recommend the formation of study classes which can meet once a week or oftener, as desired. Start early in the evening and get through early. Require no study outside of the meetings. (They will study because they will want to as soon as they get the "thirst.")

Spend the evening as follows:

I. Let each member of the class furnish one or more cases for diagnosis. They will have the medical examinations, laboratory work, etc., done by certain experts and the case written up methodically and exhaustively, and typewritten copies made. These case records are then brought into the class by each dentist. If at first he cannot persuade his patient to go to the expense of the examination, he pays for it out of his own pocket. E. g. Let them bring in pyorrhea cases. By a study of the findings in each case, certain facts begin to appear regarding the disease.

II. They study each step in the diagnosis and learn how to do each step in the examination. E. g. On blood work, they draw the blood from each other, actually make the numerical counts, make smears, stain them, and make differential counts. They learn what the blood cells look like. They know what phagocytes are and what is known about the office of the large mononuclears and other cells. Then, if they have not time to make the blood count themselves and have to have it made by a laboratory, they will soon know whether the laboratory is making the kind of count they wish,

and will not be at a loss to interpret its significance. They will no longer be obliged to show the blood count to each physician who comes into their office and ask him what he thinks about it. They will be able to surprise the physician by a statement of facts which is beyond the grade of the physicians' knowledge. The tables have turned already. If the dentists do not wish to purchase microscopes and some college is conveniently situated, let them arrange to have the use of laboratory and microscopes in the college.

The growing use of anesthetics makes it almost obligatory for the dentist to be able to make an examination of the heart and determine its condition.

While he is learning physical diagnosis of the heart, he had better extend his knowledge to lungs and abdomen as well.

Thus the course will be designed to fit the needs of the dentist in his everyday practice as well as introduce him to the scientific side of these fields.

The schedule would be something as follows:

DENTISTS' STUDY CLASS.

Each evening's study will consist of as follows:

- I Study of cases sent by members of class for diagnosis. I would recommend study of one class of cases at a time so far as possible. E. g. Pryorrhea cases, Erosion cases, Rapid Decay, Orthodontia cases which "do not stay put," etc.
- II. Study of some of the steps in diagnosis. E. g.

EVENINGS REQUIRED.

Short course. Long course.

4 evenings.	10 or more evenings.	Blood Examin.	{ Amt. of Hemoglobin Numerical count Differential count Staining Various tests
1 evening.	2 or more evenings.	Blood Pressure	{ Systolic Diastolic Pulse pressure
1 evening.	8 or more evenings.	Physical Exam.	{ 1. Chest { Heart 2. Abdomen { Lungs 3. Spine
1 evening.	2 or more evenings.	(Get an Osteopath or someone who knows about the spine to teach this.)	
2 evenings.	8 or more evenings.	Urinalysis	
2 evenings.	10 or more evenings.	Saliva Analysis	
1 evening.	12 or more evenings.	Bacteriology and the Defensive Mechanism of the Body	

12 evenings. 52 Total evenings.

Saliva analysis is necessarily much more expensive than urinalysis, because, dealing as it does with small and limited quantities, the technique must be very exact and the titrations carefully made.

The saliva of patients could be sent by mail to some central institution which had a number of people making analyses under the supervision of an expert.

The physical examinations should be made and classes on these subjects taught by some expert in physical diagnosis, either a Professor in a Medical College, or in the smaller towns, a Life Insurance Examiner.

My plan includes the adoption of a certain agreed scheme of diagnosis by *all* the study classes, under whatever auspices or society they are working, both in the United States and Canada.

This question should be settled by agreement between the National Dental Society and all the State, District, and Local Societies.

The same diagnosis blanks should be adopted, as well as the same methods, tests and technique for laboratory analyses. In this way, it will be possible to collect not only hundreds but thousands of cases from all over the Country (and perhaps from different quarters of the globe) of the different mouth diseases. These cases all having been examined by the same methods with regard to the same substances or physical conditions, statistical matter can be prepared showing that e. g. in 10,000 cases of *pyorrhea*:

Blood:

95% of cases exhibit.....	in blood
82% " " "	" "
61% " " "	" "
43% " " "	" "
Etc., etc.	

Urine:

87% of cases exhibit.....	in urine
74% " " "	" "
58% " " "	" "
Etc., etc.	

Saliva:

93% of cases exhibit.....	in acidity
87% of cases exhibit.....	in proteolytic power
79% of cases exhibit.....	in amylolytic power
62% of cases exhibit.....	in Thiocyanates
Etc., etc.	

In fact, it needs a National Dental Institute or National Institute for Mouth Hygiene to which copies of these cases can be for-

warded and where statistics can be prepared from them under the direction of trained statisticians. This Institute can be equipped to make saliva and urine analyses in a way that no small local group could equal and at much less expense.

It could also have laboratories and facilities for carrying on extensive research work both by eminent men and by post-graduate students, many of whom would be chosen and supported by scholarships.

E. g. In each dental college, the student having the highest standing in a given subject, and being otherwise fitted for research work, wins a scholarship which will support him and provide for a year or more of work in this National Scientific Institute. If he does not decide to avail himself of it, it is awarded to someone else.

Then after he graduates from dental college, he goes to the Institute and enters upon this work under direction of scientists in charge of each department and in time, receives a scientific degree.

In this manner, he becomes qualified to serve as a professor in some dental school and carry on his research work. This is the way professors of our various universities now receive their training, and this is one of the ways in which the dental schools can gradually acquire more of a scientific character.

This National Scientific Institute can also plan the work and have oversight of the study classes, providing lecturers and carrying on a lecture bureau for this purpose.

These lectures can be scientific in character for dental bodies and popular in character for large public meetings.

I have a plan to make such an institution finance itself to a considerable extent, so as to enable it to carry on much more extensive work than would be possible under the income from any endowments or contributions likely to be immediately available. But space forbids my entering upon this matter at this time.

Unless the whole work is carefully planned and undertaken with *unanimity*, most of the effort and money spent on study classes and hiring various men to do research work will be wasted. But by arranging a concerted plan of action, whereby study classes and scientific research work can go hand in hand and the results from all parts of the country can be in such homogeneous form as to be available for statistics, the thought, and money and effort will not be wasted, but will form a mighty stream of power which will prove of incalculable benefit to the human race.

Now returning to the psychology of study. The dentist has heard much about the different features of laboratory and physical diagnosis *from the outside*. He is now ready to look at these things *from the inside*. His curiosity has become aroused. He would like to know how to interpret the findings. *He already has the thirst.*

When he looks at blood cells through the microscope and sees a polymorphonuclear neutrophile (phagocyte) or other form disporting itself, it looks good to him. He isn't bored any more than he would be at a good musical comedy. In fact, he feels that he "would like to see more of you."

And when he realizes that there are other more difficult blood stains than the simple one he is using, which may throw some light on the subject he is investigating, he will be apt to study up its technique and try it with blood which he draws from his own patient.

And when the patient sees that his dentist has a microscope and is allowed to look at his own blood (which is a new experience to him) under an oil immersion lens, his estimate of this dentist rises 100%, and he will "kick" less at the size of his bill and be more willing to stand the expense of a general diagnosis.

Thus by relating his study to the cases of the patients he is working on daily, he will, with the assistance of some good instructors, soon exhibit a surprising amount of *practical scientific knowledge*.

I do not favor any attempt by busy practitioners to start in with the study of scientific subjects which are not directly related to the physical condition of their patients.

This study idea will succeed only where the subjects of study are such that the dentists can see the direct application to their daily work and *to their income*.

If they can see clearly that such study is going to increase their income, they will become interested. And once interested, they will become scientific almost unconsciously and with little mental effort.

Thus as the chrysalis acquires its wings only in response to those stimuli of growth which are normal to it, so can the human mind grow only through the process of *related knowledge*.

Just as the stomach rebels at the introduction of substances which are not related to the nutrition of the body, so does the human mind cast out and forget as soon as possible, knowledge acquired

by the "cramming" process and which bears no direct relationship to the conscious needs and experiences of the individuals.

Hence, it seems that *through this plan and method only* will the dental profession awaken to the possibilities and privileges which belong to it and so enter into possession of its own kingdom, the most glorious heritage that has ever yet come to the Sons of Man.

THE RELATION WHICH THE NASAL AIR PASSAGES HAVE TO THE DEVELOPMENT OF THE NOSE, JAWS AND FACE.

BY GUY STEADMAN, D. D. S., ST. PAUL, MINN.

This is a topic which should be of great interest to the dentist, and has been most sadly neglected and overlooked; a subject, which the orthodontist and rhinologist are certain is of the greatest importance in their work; a science of which the general practitioner of dentistry is becoming convinced, that he, also, must have unlimited knowledge.

I am not going to try to cover the whole field of Orthodontia and bring out the etiology, treatment, and prognosis, of the *three* great classes of irregularities of the teeth, neither am I going to speak on appliances nor their application, I simply want to talk concerning the etiology, or causation, of Class II Division I, *one* of the great classes of irregularities we have to deal with.

Before starting directly upon my paper, there are a few dental terms which I would like to mention, as perhaps it will make my remarks a little clearer. Very often terms which are common in everyday conversation lose their full meaning and we speak of them with a vague understanding of what they really stand for. We find ourselves using these terms day after day, which, if asked to define them, we would have to hesitate, and then perhaps not be able to give a simple, coherent definition.

The first of these terms is the word "Orthodontia." What is Orthodontia? Orthodontia is simply the art of *assisting* nature in building the line of occlusion. If you note, I use the word "assisting" nature, as the process of regulating is not a pathological process, but strictly a physiological one. *We* do not move the teeth. We simply create the stimulus. We give the stimulus through our

appliances. We give the stimulus for bone growth and tooth movement, through the agents of the osteoclasts and osteoblasts—the former a bone destroying cell, and the latter a bone building cell. In the definition,—“the art of assisting nature in building the line of occlusion,” how many of us have a full conception of what the “line of occlusion” fully implies? Perhaps some of us think that it is an imaginary line, or that there are two lines of occlusion, one for the upper jaw, and one for the lower jaw. Dr. Angle’s definition is very clear and concise. He defines it, “as being the line with which, in form and position according to the type, the teeth *must* be in harmony, if in normal occlusion.” Thus we see that “the line of occlusion” changes according to the type of the individual. Hence we could not expect to find in the broad head, or brachycephalic type, an arch of the same dimensions and character as in the long head, or dolichocephalic type. Each arch is in exact keeping with its own distinctive type, and to try to put a dolichocephalic arch on a brachycephalic type, as has been done, will never carry out nature’s plan of regulating. We must follow nature’s laws. There is enough material in this term for a whole paper. I will simply say that there is but one line of occlusion which is governed in form and position by the type of the individual, and that the teeth must be in harmony, if in normal occlusion.

Orthodontia in its full meaning not only includes the study of corrections of irregularities of the teeth, and normal denture when completed, but includes the beginning, growth and development of each part of the human denture. Its development is most intricate and fascinating and to note the dependency which one part has upon the other, should be a subject for more thought to every dentist and rhinologist.

What does the normal human denture include? It includes not only the jaws, dental arches, alveolar process, teeth and peridental membrane, but includes also the muscles of the lips, cheeks, tongue and mouth, the throat, palate, and nasal passages, as these all assist the teeth in performing their functions. Of these, I want to enlarge upon the nasal air passages, and of what importance normal breathing has in the developing of the nose, face and jaws, and of what vital importance it has in the mental capacity of the individual.

We have two air tracts by which the air may enter the pharynx to the lungs; the upper air tract through the nose, and the lower by the mouth. The upper tract is the normal or physiological route,

upon which the health of the individual depends. We breathe through the nose for a definite reason. As the air enters the nose, it is warmed, moistened, and cleansed and thus prepared, which, if entered by the mouth, falls far short of being sufficiently prepared for the lungs. As the air is inhaled through the nose, a spiral whirling motion is set up in the inferior meatus of the nose, caused by the inferior turbinate bone, resulting in a delayed motion, bringing the air in direct contact with a greater mucous surface than it would if a direct route was taken, such as in mouth breathing. It passes over the mucous membrane, is warmed and moistened, and also cleansed by the cilia. The normal mucous membrane is richly supplied with a fine net work of blood vessels, which in one day gives off from one pint to one quart of H_2O , so you see how important nasal breathing is in the preparation of air for the lungs. The excretions from the nose have also a germicidal effect.

The inferior turbinate bone is of vital importance, and is often badly used in surgical operations. It has even been known to have been entirely removed, which simply means that normal nasal breathing has been converted into mouth breathing, through the nose.

While I was attending "The Alumni Society of the Angle School of Orthodontia" meeting in New York several years ago, a rhinologist, who was on the program for a paper, brought with him a patient who had had his interior turbinate bones removed. The doctor brought this man to the meeting to give added strength to his paper. The patient said that since the operation he had had a continual stinging, burning sensation in his nose, from which he could not get any permanent relief and that sprays were only good for a short duration of time and gave only temporary relief. He explained it, as living a life in hell from the hour of the operation.

We can see how day after day and year after year continued improperly prepared air to the lungs would have some pathological effect upon the individual.

The habit of mouth breathing generally begins at an early age, and is most prevalent between the age of three and fourteen or during the most important period in the growth of the dental apparatus. As time progresses, the child becomes pale, anemic, has not the interest in things that he should, his bodily development is retarded. As the child weakens he is predisposed to all manner of diseases, his mental capacity naturally suffers also, and we find the child who,

perhaps, was very bright, becoming listless and not advancing in his studies as he should.

Some of the causes of mouth breathing we all know, but the results of mouth breathing are more far reaching than most of us imagine. The causes of mouth breathing are always pathological and are manifest in the posterior, middle, or anterior nares, or all, at the same time. We know how richly supplied with blood vessels is the mucous lining of the nose, maxillary sinuses, frontal and ethmoidal sinuses, and what little engorgement of the blood vessels will cause a restriction in the nasal air passages. The greater the engorgement, the less passage for air. A severe cold in the head may cause a complete closure of the nasal passage, necessitating mouth breathing, which may pass away in a few days or may result in hypertrophic growths, or polypi, or many other pathological growths resulting in permanent mouth breathing. Any inflammation of the mucous membrane overlying the bones of the nose and air chambers will have a serious effect upon the proper growth and development of the underlying bones, especially while the child is developing. This is often the cause for deflected septum, cartilaginous and bony enlargements, elongated turbinate bones, and arrested development in the inter-maxillary region, causing crowding of the incisors.

We can see how engorgement of the blood vessels of the mucous membrane lining the nose, maxillary and ethmoidal sinuses will cause, not only abnormal and stunted growths in the nasal passages, but also of the whole face, destroying the contour, destroying the real type of the individual, thus destroying the "line of occlusion."

A very common cause of mouth breathing is the pharyngeal tonsil or adenoid. It is a very troublesome friend to the orthodontist and is the cause of a distinctly well defined class of mal-occlusion.

Adenoids appear in young children, and usually disappear about the age of puberty, but sometimes are retained much later. Adenoids are prevalent at the most important time in the growth and development of the child's dental apparatus, so it will follow naturally that some pathological condition will show itself. This it does in a most marked degree, the similarity of such cases being most striking.

You can diagnose them on sight; a narrow upper arch, protruding upper anterior teeth, and lack of development of the lower jaw. The real beginning of this class of mal-occlusion is at the time of

the eruption of the first permanent molars, and is determined by the distal locking of the lower first molar. This class of mal-occlusion may have been in evidence before the eruption of the first permanent molars, established during the development of the deciduous teeth, caused by adenoids. The adenoids may have entirely disappeared at the time of the eruption of the first permanent molars.

The normal locking of the teeth brings the mesio-buccal cusp of the upper first molar in the buccal groove of the lower first molar, and the distal locking results in the disto-buccal cusp occluding in the buccal groove of the lower first molar. The locking at first may have been ever so slight, but if the tendency of the inclined planes of the cusps are toward mal-occlusion, the mal-occlusion will be determined. After that, the eruption of the teeth must follow in logical order, resulting in their mal-occlusion. At the time of the eruption of the permanent first molar the temporary teeth are pretty well worn, and the cusps have lost some of their controlling influence over the jaws of keeping them in their relative position. As the mouth is being held open for breathing, the mandible takes a slightly distal position, due to the action of the muscles and owing to the fact that the glenoid fossa is shallow and not perfectly formed at this age, permitting greater movement. The child may also have acquired a habit, such as lip biting, thumb sucking, etc., which retards the correction of these cases, and it should be broken as early as possible.

As the mandible moves distally, it naturally brings the lower first molars, when they erupt, in distal occlusion.

It must be remembered that this class of mal-occlusion in almost every case is caused by adenoids or some nasal obstruction necessitating mouth breathing.

How does this form of mal-occlusion effect the development of the jaws? As the mouth is being held open in the act of breathing, the muscles of the cheeks and lips act in an abnormal manner; the upper lip is pulled upward, it fails to develop normally, and thus it has no restraining influence labially upon the upper incisors. At the same time the tongue is doing its share toward moving the upper incisors forward; for, as the air passes through the mouth the mucous membrane becomes dry; in an effort to moisten the membrane, and in the act of swallowing, the tongue naturally uses some pressure on the lingual of the upper teeth, forcing them labially. The lower lip, at the same time, is enlarged by being drawn under

the lingual of the upper incisors in an effort to close the mouth. This is a powerful factor in pushing the upper incisors labially and lower incisors lingually. This may develop into a bad lip habit which is very hard to break.

During this time the cheek muscles are exerting pressure on the buccal of the molar, and pre-molars narrowing the upper arch. The tongue lies on the floor of the mouth, exerting no force on the lingual of the upper teeth to counteract the buccal muscles. The lower anterior teeth elongate through lack of function, in many cases so much so, that they touch the mucous membrane of the upper jaw.

In this class of irregularities it looks as though there is a great amount of over development in the upper jaw, which has often led to the extraction of two perfectly healthy bicuspid, one on each side, for the correction of these cases.

It seems to me that this is not the ideal nor best way of correcting this class of mal-occlusion, nor is it the simplest or quickest method, as many think. It is not a case of over development of the upper jaw; it is a lack of development in the nasal and facial region, the causes of which I have mentioned, and lack of development of the mandible.

It must be remembered that the child mouth is correspondingly more prominent than the adult mouth. Dentists in the past have extracted these teeth (I have done it myself) because they thought if these teeth were retained it would make the mouth too prominent when brought into the line of occlusion. This prominence of the mouth, usually, immediately follows upon the completion of the case, but watch your case a few months and you will see that nature will take care of that fullness for you. Nature will build the contour of that face, if you correct the irregularity and establish normal occlusion.

Right here is where we need the help of the nose and throat man. The rhinologist must be consulted and such pathological condition must be removed and normal breathing restored. If not the work of the dentist will be a failure. This should be attended to first. Too much emphasis cannot be laid upon the removal of abnormal growths and the restoring of proper breathing.

What are the causes for this lack of development in the mandible? Primarily we find this distal relation of the lower jaw at the time of eruption of the first permanent molars, and its being held

in that position by the action of the muscles and the cusps of these teeth.

There is another factor which enters into this lack of development of the mandible; the direction of the mechanical stress which the permanent molars have in occluding with each other. In normal occlusion the disto-buccal cusp of the lower first molar occludes in the central fossa of the upper first molar, throwing all the stress at the apical end, mesially, thus the tendency for growth in the lower jaw would be forward. Now, in distal occlusion the central fossa of the upper first molar receives the mesio-buccal cusp, with a tendency to tip the lower first, and instead of driving the apex of the lower first forward it drives the apex distally, or at least not forward, and thus the tendency is to retard bone growth of the mandible. This must be a powerful factor, as we all know of what great value the force of occlusion has in stimulating bone growth.

Dr. Noyes of Chicago has written very interesting articles along this line of thought.

We know that the direction of growth of the mandible is outward, forward and upward. Now, if from any cause the growth of bone is inhibited, the abnormal comparative size with the upper is soon very noticeable. Very often such cases are diagnosed incorrectly, as having an abnormally large upper jaw in relation to the lower, which in reality, is more nearly normal than the lower jaw.

As a summary, the points which I have tried to bring out are:

1. Get your cases early, when they are beginning to form; the results are quicker and better.
2. Diagnose your cases from the first molars, as irregularities of the anterior teeth are only symptoms of the real irregularity.
3. Be sure that nasal obstructions are removed and normal breathing restored.
4. Look twice before you tolerate extraction.

INJURIOUS EFFECTS OF GRITTY SUBSTANCES UPON THE TEETH.

BY J. P. CARMICHAEL, D. D. S., MILWAUKEE, WIS.

Of course you have seen the mouth of a dog or other animal, and, of course, you cannot have failed to observe the perfectly clean, healthy appearance which it presents and especially the bril-

liant polish of the teeth. And, equally of course, you are familiar with the dull and lifeless appearance of the average human mouth, the gums red and the teeth dull and without luster or the appearance of life.

The dog keeps his teeth clean and polished by mastication of rough food, by gnawing at bones and otherwise exercising the teeth as nature intended. The result is that his mouth is healthy. Primitive man kept his teeth in good condition in the same manner, and today, if we were to masticate habitually quantities of coarse food, our teeth would be as brilliant as those of the animals.

It is this polish of the teeth which prevents decay and pyorrhea. The teeth whose natural luster has not been marred or dimmed stand little chance of suffering from decay. Foreign matter will not readily adhere to such a surface and it is in the adhesions of foreign matter that the authorities find the beginnings of disease. But any dentist knows that the mouths of the majority of the people show teeth stained, discolored and often half covered with deposits of tartar and other material. It is primarily the fault of our civilization, expressed in prepared foods which require little or no mastication.

Obviously the way to prevent such condition is by keeping the teeth perfectly clean and maintaining the natural luster of the enamel, designed by nature for protective purposes. The first formations that adhere to the enamel and destroy this luster are not visible except on the closest examination, but they can be readily discerned by applying a disclosing solution which is painted over the entire crown of the tooth and is readily washed away from the clean portion of the enamel without affecting the gloss.

This test demonstrates that the first formations are situated at the necks, at the gum margins and between the teeth. These are plaques or scales, an exfoliation of the gum tissue, which combine with abnormal secretions and adhere so closely on the enamel that the ordinary means of cleaning the teeth do not remove them. These provide an excellent formation for other deposits, which soon gather in sufficient quantity to produce decomposition. The multiplication of bacteria in these decomposing deposits is generally accepted as the primary cause of caries and the same microbic action may well be considered the primary cause of pyorrhea.

Now, what have we been doing to guard against this condition?

Not much, and what little we have been doing has been, in my judgment, entirely wrong.

The first thing to which we resorted was the tooth brush, which has its great usefulness in removing loose particles of food and stimulating a healthy action of the gums. But it is entirely inefficient to remove the adhesion referred to.

So then we resorted to dentifrices of various kinds, all of which contain crystalline grit. These powders or pastes have been applied with the brush, subjecting the teeth to a sort of scouring process, which process, instead of restoring the luster to the enamel, has had the contrary effect of scratching and marring it until its gloss is in many cases entirely destroyed, giving a rough surface, ideal for the formation of deposits with all their train of ills. All the substances in general use for cleaning teeth are harsh and gritty, although, of course, they are exceedingly fine grit. Prepared chalk, as we know, is of crystalline formation and is sharp enough in its effects to destroy the enamel in a relatively short time. Pumice stone is hard enough to scratch glass, and, no matter how finely pulverized, will scratch the enamel of the teeth.

The enamel, as we all know, is the hardest of animal tissues. It may be compared with glass and experiments on glass with pumice stone or prepared chalk will readily demonstrate the effect of these things on the teeth. So that by the very means through which we have been trying to establish a healthy, cleanly condition, we have been making the teeth less healthy and more receptive to the inroads of disease.

In cleaning the teeth the use of an abrasive is necessary to remove stains but this should not be used over the entire surface of the teeth but confined to the stained area and it must be of a nature that will not scratch and which will put them in condition to receive a brilliant luster when the polishing preparation is applied. Such a polish must be in the form of an impalpable powder and must be applied dry for any powder that is applied wet means that scouring must be done with it, and scouring is ruinous in its effects.

A newly invented process consists of calcining certain minerals including a combination of rare earth nitrates at exceedingly high temperatures. This produces an impalpable powder which possesses properties peculiarly adapted for polishing very hard substances without any scratching effect. So efficacious is it in this regard that

porcelain teeth may be polished with it, producing a life like effect hitherto unobtainable.

The product of this process is medicated by the addition of certain substances, as follows:

R Minaralis Calcinatae
Bethanaphtholi
Zinci Oxidi
Acidi Borici
Ol Aromatici q. s.

This formula is the result of many years of study on the proper prophylactic treatment of the teeth.

For home treatment patients should be instructed to dry the teeth thoroughly and apply the polish daily with linen cloth or cotton roll, rubbing them vigorously. They may be instructed how to use tape and polish the necks of the teeth. Then they should be advised that, after the polish has been restored by the dry friction process, any gritty substance applied to the teeth will immediately destroy the luster. The whole secret is to keep the enamel of the teeth so brilliant that it will accomplish its function of warding off disease. Keep it so highly polished that no deposit of food or plaques, or other foreign substance may find lodgment there. They are then as nature designed them, and to bring about such a condition is the highest attainment of dentistry.

You will recall what Dr. F. H. Skinner has said about pyorrhea—"It is universally agreed that neither pyorrhea nor decay is found where surfaces have always been kept smooth and polished; that all decay is the result of by-products of bacteria which can only be removed by friction." But in trying to follow this suggestion, we have confounded scouring with friction and have injured where we sought to aid. The dry friction rub, in my opinion, presents the real prophylactic treatment.

AN INDEX OF THE WORLD'S DENTAL LITERATURE.

BY THEO. VON BEUST, D. D. S., M. D., DRESDEN.

Far seeing promoters of dental learning have long since recognized the value of an Index embracing all dental publications. Few dentists have the privilege of receiving more than four or five dental journals. If we exclude from consideration those con-

nected with dental universities and large libraries we can certainly say that the former are extremely rare. As a matter of fact, there exist upwards of 150 purely dental journals, not to speak of the articles related to our profession which appear in medical journals.

Every dentist has a line of work which interests him specially, and seeks and eagerly devours that which other investigators write about his favorite topic. Here is the orthodontist, there is the prophylactist; the former favors the articles on orthodontia, often to the exclusion of all others; for the latter the publications on prophylaxis are of prime interest. In view of the above mentioned number of periodicals it is a sheer impossibility for the practitioner to glean from this mass of literature that which appeals to him, even if he should have access to all publications. The inevitable result is a loss to the student, for whom the greater part of the contributions touching upon his specialty, are lost. A further loss is suffered by the author, who has taken great pains to frame his valuable ideas for readers, the majority of whom will never learn of the existence of his article. A third loss is suffered by the scientist, who finds after devoting weeks or months to a certain subject, that he has been throwing away his time and energy upon explored territory. A further and by far the greatest loss is inflicted upon dental science, in which progress is impeded by the inability of the world's dental investigators to remain in communication with one another.

The first attempts, to our knowledge, to establish an Index were made in the American Library of Dental Science between 1839 and 1849. Then followed the works of J. O. Coles, who published a list of works on dentistry in 1882. At about the same time Taft and Crowley dedicated their list of books and periodical literature to the profession.

At a meeting of the Institute of Dental Pedagogics in December, 1908, it was decided to establish a classified card index of the leading dental journals and a committee composed of prominent members of the American profession was appointed to inaugurate the initial steps for the consummation of this idea. This has since led to the organization of the Dental Index Bureau, which has been fully described in the *Dental Cosmos* and other journals. In Germany an attempt was made by Professor Port, of Heidelberg, whose tabulation was discontinued in 1902. In the fifth International Congress, held in Berlin, 1909, much time was devoted to the dis-

cussion of the value of a permanent Index, one which could be issued regularly and if possible monthly. This led to the establishment of the Index in the "Ergebnisse der Gesamten Zahnheilkunde." This Index was edited by the well-known author, Dr. Paul de Terra Zollikon-Zürich. After a short period, however, it was transferred to the "Deutsche Zahnärztliche Zeitung," where its continuation was prevented by a sudden change in the management. Now it has been given a place in the "Archiv für Zahnheilkunde, Dresden," a monthly magazine published by the "Society of American D. D. S. practicing in Germany," who will endeavor to do all in their power to supply the necessities for its maintenance and to make the Archiv its permanent home. Dr. de Terra, with his exceptional capabilities and large experience, has access to over a hundred purely dental journals and over 200 medical periodicals. The journals used in the compilation of this index represent all the civilized countries of the globe, to-wit: Germany, 16 periodicals; Austria, 13 (7 German, 4 Hungarian, 1 Bohemian, 1 Polish); Switzerland, 2 (1 German, 1 French); Belgium, 3; Holland, 1; France, 11; England, 8; Italy, 3; Spain, 1; Sweden, 2; Norway, 1; Denmark, 1; Russia, 4 (3 Russian, 1 Polish); North America, 12 (English); South America, 10 Spanish, 1 Portuguese; Australia, 1.

In the subsequent issues the headings of the various chapters will be printed in German, English and French, thus making the Index useful for those unacquainted with the German language.

There is little doubt that the Index, as at present instituted in the "Archiv" with its 300 to 350 subject titles monthly, will meet all the requirements demanded of a serviceable Index by the essayists of the fifth International Dental Congress.

NEWER PHASES IN CROWN AND BRIDGEWORK.*

BY F. E. ROACH, D. D. S., CHICAGO, ILL.

We hear a great deal of late about the mouth as a foci of infection for many diseases, and while a great many of these foci are to be found around fillings and inlays with poor contacts and rough gingival margins, pyorrhea pockets and alveolar abscesses it is no doubt true that our crowns and bridges are responsible for their share of the trouble.

*Read before the Chicago Dental Society.

There is no question in my mind but that we have abused this work in both faulty construction and injudicious selection of teeth to serve as abutments. We have also been guilty of exercising poor judgment in the selection of cases where crowns or fixed bridges should be employed at all.

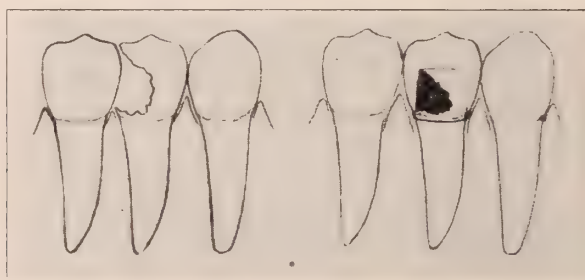


Fig. 1.

We are confronted today by the charges made by Dr. Hunter and others that our crown and bridgework is jeopardizing the lives of many of our patients and while the extent of the actual danger is probably exaggerated, the preponderance of evidence at this time would indicate that the many pathologic conditions that do occur as the result of faulty obstruction, may be a foci of systemic

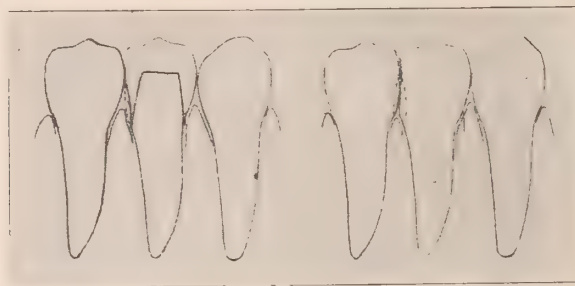


Fig. 2.

infection. And if for no other reason than this we must put forth our very best efforts both in the selection of cases where crowns and fixed bridges shall be used and in their construction.

Plate 1, a, shows a very common condition of extensive decay and the usual loss of space between adjacent teeth. Before crowning such teeth the normal space should be restored if possible so that

the proper interproximal space on each side of crown may be obtained. Plate 1, b, shows outline of crown for case after space is

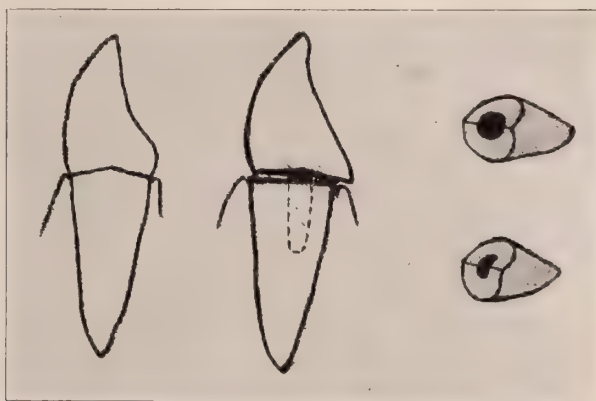


Fig. 3.

restored. The tooth should be built up with amalgam to facilitate fitting crown accurately at the gingiva.

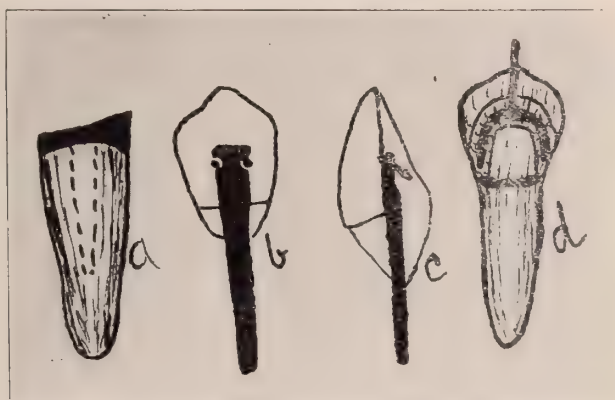


Fig. 4—Porcelain-faced crown with cast gold back. a, proximate view of root; b, shows means of maintaining relation of facing and dowl while fitting to root; c, facing, dowl and wax ready for adjustment to root; d, tooth preparation for lingual hood and iridio-platinum reinforcement wire fitted to groove.

Where it is impossible to restore space the tooth should be cut away freely mesially and distally, and the crown given a concave surface, and in this way secure at least some interproximal space. See Plate 2, b.

The loose pin porcelain crowns put out by the manufacturers,

when properly fitted, may be employed very satisfactorily in some cases, and in view of the fact that they are so extensively used a simple means of obtaining accurate adaptation to end of root and peripheral continuity may not be amiss. With root cut down to outline of gum the crown is ground to approximately fit. The dowel is now fitted and secured to crown with gutta percha. A disk of

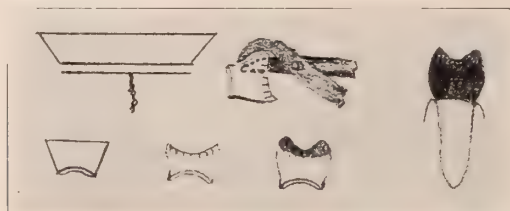


Fig. 5.

gutta percha is placed over end of crown, warmed over flame and forced to place on root. By this means a sharp outline of root is obtained and the high places on root noted so that by repeatedly trimming off root with facer, stoning off excess of gutta percha, and at the same time grinding base of crown to outline of root in gutta percha a good fit may be had in a few minutes. Plate 3.

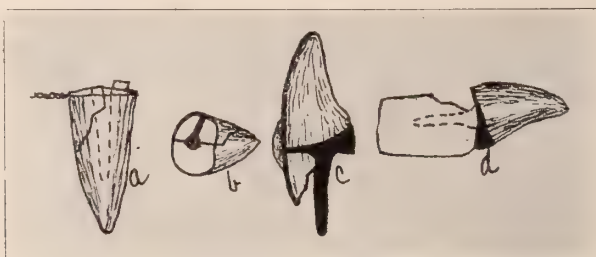


Fig. 6—Cast base crown fitted to split root. a, proximate view of root showing labial fracture held in apposition with wire; b, shows groove from orifice of canal to periphery of root across fractured portion; c, crown, dowel, wax and fractured piece of root assembled ready for making cement model; d, shows crown and wax base in position on model and piece of root removed ready for wax duplicate.

PORCELAIN-FACED DOWEL CROWN.

While the porcelain-faced form of crown is seldom necessary, there are cases where it may be employed advantageously. The technique for this form of crown is as follows: Prepare root, fit band and dowel as for the usual construction, a, Fig. 4, grind and fit facing in the mouth. The dowel is now removed and hammered

flat on projecting end until wider than distance between facing pins. With knife-edge stone file or plate punch make notches to correspond with pins. See Fig. 4, b. Facing and dowel in this relation are replaced in the mouth to verify the length of dowel, after which the dowel is threaded, heated and forced through a cone of inlay wax (c). Soften the cone of wax, adjust facing and dowel with wax cone and force them to place on the root, having band in place at the time. Chill the wax and remove all parts together by passing an instrument under the band and working off carefully from side to side so as not to disarrange the parts. Trim off excess, remove facing, put carbon points in pin holes, and you are ready to cast and finish in your favorite way.

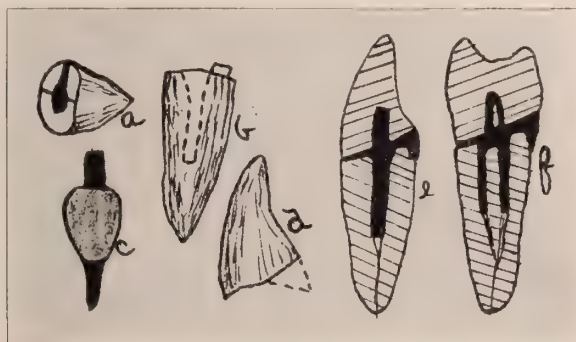


Fig. 7—Cast base crown. a, end view of root; b, proximate view showing lingual interlocking shoulder; c, dowel surrounded by cone of wax; d, porcelain crown showing how lingual extension is cut off; e, of cross section of completed crown.

For this class of work there is no objection to the use of scrap and junk gold for the casting—preference is given iridio-platinum for dowel and 22 or 24k. gold for band. The facing pins may be bent down at an angle about 45° or 50° in cases of close bite. Lingual Hood cast, d, Fig. 4.

GOLD-CAST CUSP CROWN.

There are a few that have adopted the cast cusp gold crown, but the technique of this crown is so little understood that its advantages over all other methods of construction are not appreciated. To my way of thinking, there is no other procedure that compares with it in any respect. The facility with which contour and occlusion may be produced is a marvel of simplicity and accuracy.

We frequently hear the claim that this crown requires too much

gold to permit of its general use. This objection I am prepared to prove is not correct. The technique of this crown is simple, quick and accurate, and needs but a few words to explain.

With tooth properly prepared, the band is fitted in the usual manner and contoured with pliers. Band should be made long enough so that it may be cut and fitted to approximate the occlusion. A cone of inlay wax is now softened and placed over occlusal end of band and patient instructed to close upon it. Chill the wax, remove together with band, carve to anatomical form indicated.

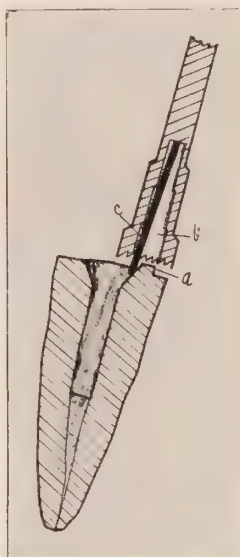


Fig. 8—Cross section of root and root facer. a, shows lingual interlocking shoulder; b, shows hole into head of facer; c, flexible guard pin. The flexible guard pin permits adjustment of the one-size facer to any size root without laceration of tissue.

and with Suction Wax Carver remove any excess of wax from inside of crown. For this purpose I prefer the more transparent waxes so that the thickness may be more readily determined by holding up to the light while carving. Scrap and junk gold may be used for this class of work to better advantage than for any other purpose. In Plate 5 the steps are outlined.

SPLIT ROOT.

While the casting process has completely revolutionized all my prosthetic and operative procedures in everyday routine work, it has at the same time enlarged the field of reparative measures.

so that operations heretofore practically impossible of satisfactory accomplishment have become commonplace and simple, with re-



Fig. 9—Labial, proximate and lingual views of compound inlay and may be used for short bridge abutment or for pyorrhea splint—especially adapted to lower incisors where proximate fillings are necessary. a, Plate 10 shows end view.

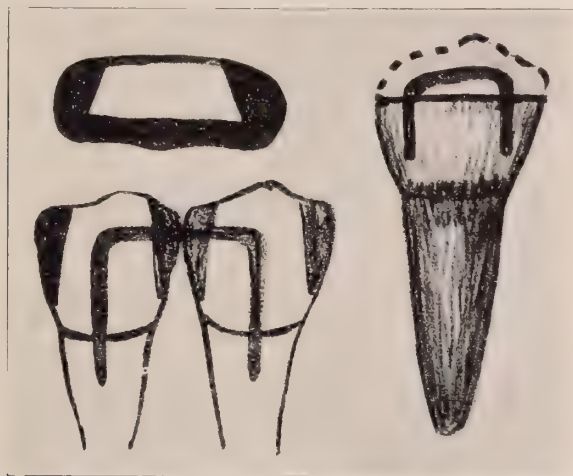


Fig. 10—a, shows iridio-platinum reinforcement connecting gold inlays in bridge and pyorrhea splint cases; b, shows wire staple anchorage for occlusal restoration.

sults beyond our fondest hopes. As an illustration of this I am going to give you a description of a method of repairing split roots that has given me great satisfaction.

If our good friend Taggart had done nothing more than made possible the restoration to comfort and usefulness of teeth with split roots he would have rendered a great service to humanity. And while this operation is only one of many, it is unique in character and shows the possibilities of the process.

When a case presents itself with root fractured not more than one-half its length and the fractured piece is intact the repair is simple and positive. The procedure is as follows: Draw fractured part into close apposition by twisting wire around it, as in Fig. 6, a. The steps outlined below for cast base crown are identical, so



Fig. 11—Buccal view of lower bridge, showing interproximate spaces in casting. a, Plate 12, shows proximate view of dummy with preferred adaptation to alveolar ridge.

that when wax base is secured the piece of root is extracted and carefully placed in position on wax base—the groove across end of fractured piece and the side of canal affords a definite guide in locating it (b). The piece is now secured to the crown and wax base with wax (c). The fractured surface and dowel is coated with a vegetable oil and a batch of cement, mixed stiff, is pressed into apposition with fractured surface of root. When cement is hard it is scraped down flush with piece of root, after which it is separated from crown and piece of root. Piece of root is carefully separated from wax base and crown with base readjusted to its proper position on cement model, Fig. d, and inlay wax melted into space originally occupied by piece of root and scraped down flush with surface of cement model. This gives us an exact reproduction in wax of the piece of root, united as an integral part of the original wax base in its proper relative position, which is also true of the casting. When cementing such a crown to place in the mouth I prefer to use Evans' gutta percha cement on fractured surface.

CAST BASE PORCELAIN CROWN.

As I have discussed fully, in another paper, the shortcomings of the various crowns that are in general use today, suffice to say at this time in this connection, that the cast base crown in my opinion, all things considered, stands at the head of the list for the ten anterior teeth.

The technique of this crown is as follows: Trim root to gum.

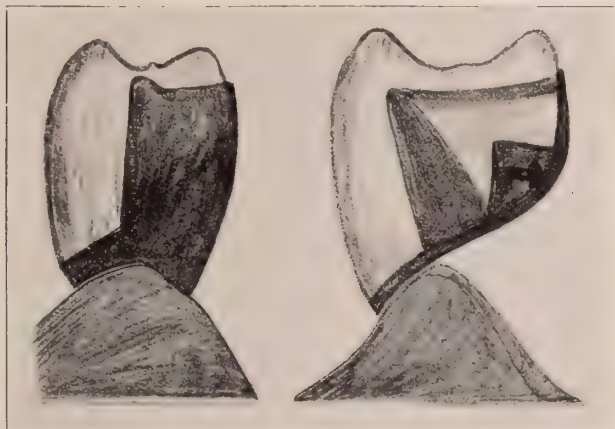


Fig. 12—Shows use of vulcanite tooth by cutting proximate grooves for retention.

enlarge canal for suitable dowel, enlarging or extending orifice of canal labially and lingually, Fig. 7, b, avoiding as much as possible weakening root by mesio-distal cutting. With the Universal facer the root is trimmed off labially below the gum by giving the facer a sweeping motion. The lingual interlocking step is now made by placing point of the flexible guard pin of facer into canal and forcing facer back until cutting edge is in line with lingual periphery of root; then, by holding it in one position, the lingual surface is cut down, leaving the inner portion, b, standing. A groove is cut from orifice of canal to labial surface, a, the object of which is the reinforcement of wax at this point while fitting. It also adds stability to crown when set. Select any loose pin crown suitable for the case, grind to approximately fit root and grind off linguo-gingival angle, as in Fig 7, d. Fit dowel to canal, allowing it to project just enough so that it will reach bottom of hole in crown when labial end of same just touches end of root, thus de-

termining exact length of dowel. Iridio-platinum wire 13-gauge threaded, is preferred, but clasp gold may be employed. The dowel is heated and forced through a cone of inlay wax, Fig. 7, c. Crown is placed over end of dowel, wax softened over flame while being held between fingers to prevent overheating, and when soft forced partly to place on root, remove, trim off excess wax. Repeat the above procedure until crown is fully seated, a perfect imprint of end of root is obtained in the wax, and excess of wax is trimmed to peripheral outline of both tooth and root, and sprue

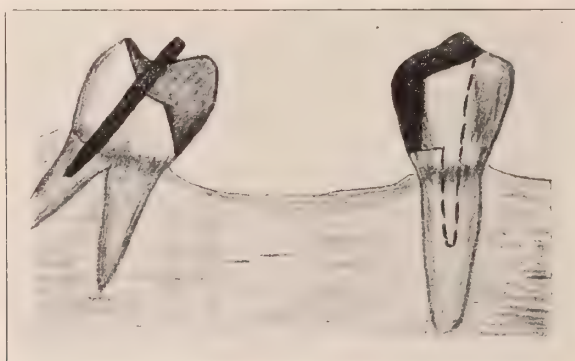


Fig. 13—Showing use of loose pin in molar as a means of facilitating the setting of bridges where abutments are not parallel, especially inlay abutments.

attached lingually. The crown is removed and the dowel with wax base pattern invested and cast preferable in 24k. gold, e and f.

In my experience with casting I have made the following observation.

That nearly all prosthetic castings should be made in combination with iridio-platinum or gold in wire or plate form as a means of reinforcement.

That iridio-platinum, on account of its great strength and freedom from oxidation, affords the best reinforcement.

That 24k. gold reinforced with iridio-platinum is the best for inlay abutments.

That the reinforcement plan expedites as well as strengthens the work and obviates bulkiness, which is so essential in many instances.

That it is best not to heat any alloy of gold containing base metals to the point of oxidation when casting upon it.

That it is unnecessary and detrimental to heat a flask to a red heat or anywhere near it when burning out wax.

That the elastic limit of scrap or junk gold is practically nil and it should not be used where much strain will be brought to bear upon it.

That alloys of gold with platinum will become very brittle when cast a few times. This, Dr. Taggart tells us, is due to contamination with silica contained in the investment.

That the casting process makes possible the employment of almost all forms of porcelain teeth and that provision should be made for cementation rather than casting directly on to the porcelain.

That nearly all inlay abutments, regardless of size and shape of cavity, should have some form of supplemental pin anchorage.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY.

FORTY-NINTH ANNUAL MEETING, PEORIA, MAY 13-16, 1913.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

E. F. MOLT, D. D. S., Chicago:

Mr. President and Members of the Illinois State Dental Society:

The address we have listened to is note-worthy both because of the many important topics upon which it dwells and because it is a resumé of a most successful administration of this society's affairs. Dr. Waltz and the society are both to be congratulated upon the status of things dental in our state at the end of his term of office.

To my mind the most important happening of our past year has been the reorganization of the National Dental Association and this society's part in bringing about that change. Many other states have looked to Illinois for leadership in this matter. Much good will accrue to every member of every state society through membership in the national body, for even though they may not always attend the meetings, association with others in the large society will inevitably enlarge their horizon and help to banish provincialism. It is unfortunate that so many members of our profession are of necessity so limited in their activities outside of their actual bread win-

ing, for we are entering, or rather we have entered upon an era of preventive dentistry and will be called upon continually to work hand in hand with the medical men. Never before has that profession turned to dentistry as it now is doing and it behooves every one of us to be wide-awake and well informed upon all subjects appertaining to the vital questions of the hour in medical matters.

Such men as Billings, Mayo, Post and Rosenow have thrown the gauntlet before us, and are waiting to see us accept or reject their challenge. The dentist who scoffs at the mention of oral sepsis, who puts "pot-boiling" above his duty to his patient and inserts septic bridge work, crowns and fillings without proper contact, who overlooks mouth pyorrhea and chronic abscess conditions, reflects discredit not alone upon himself but upon his entire profession.

Dr. Waltz's suggestion with regard to the dentist's reading should be an insistent demand. We must read; there are so many vital questions about which we must keep informed, at the cost of constant study. And let us hope that the colleges are realizing the demands that will be made upon dentists in years to come, for it is easier to acquire this knowledge in school than later.

For the men who are in practice, study classes under the direction of competent diagnosticians should be formed, and instruction received in such matters as serum therapy, bacteriology, and differential diagnosis, with actual work in blood counts, differential counts, blood pressure, saliva analysis, urinalysis, and preparation of cultures and autogenous vaccines. There must throughout be less guess work and more certainty in our operations, and all diagnostic adjuncts must be available and made use of. One which has been of incalculable benefit in medicine and surgery but too little used in dentistry is the Roentgen ray. I venture to say that no one thing will aid more materially in diagnosing obscure cases than this.

Dr. Johnson in a recent editorial has sounded a timely word of warning. Time was when the dentists' ministrations were chiefly confined to the extraction of teeth. Then with the advances in knowledge and technique came conservation. As long as there are extremes however, there will be extremists. And there were and are extremists in conserving teeth, who retain teeth that are a positive menace to their patient's welfare. Now with the disclosures of the medical men, it is to be hoped that the pendulum will not swing to the opposite extreme and indiscriminate extraction be

practised. By all means let us conserve teeth, but let us do it intelligently and with consideration for the good of our patients! Let us make accurate diagnosis and act in accordance.

Dr. Waltz has referred to the research fund now being gotten together by the Oral Hygiene Committee of the National Dental Association. This is without doubt a desirable cause and worthy of support from the profession. We have in recent years made some rather broad statements with regard to oral hygiene that we are really not in a position to back up with positive proof. We have not the slightest doubt of their truth, and very little as to their accuracy, but only through scientific research can such statements be positively substantiated.

I quote from a recent article by Dr. Nodine of New York, whose resumé of references to oral sepsis in medical literature published last year under the title of "Life Insurance and Carious Teeth in Septic Mouths," were admirable, and worthy of remark for their evident scientific merit. He says:

"American dentistry has long dazzled the world with its empirical achievements and imperial promiscuity. But the age empirical, the age promiscuous, is past or passing. The age scientific is here. It is not what we *believe* to be true, it is what we know to be true that counts. It is not what we hope is true, it is what we can prove is true that is given attention. It is not the expedient, the expeditious, the extempore, the extravagant; but the expert, the experienced, the exquisite, the excellent that receives the 'blue label' and 'the blue ribbon' not only in dentistry but in every department of human effort.

"We are basking in the moonlight of an inherited reputation, while Germany, Sweden, Austria, Denmark, France and England are placing dentistry on a new foundation, scientifically sound, professionally secure, and generally and pre-eminently useful in the sphere of public health and public service.

"Sweden has under government supervision, control and operation, the finest systematized organization of dental service and dental clinics for school children in the world.

"Germany has in operation, or provided for, school dental clinics, in over one hundred and twenty cities and towns, and also has, in connection with various workmen's insurance systems, instituted dental treatment for the benefit of the workers.

"England and Scotland have in many towns and cities made

substantial provision for the establishment of school dental clinics or made provision for the treatment of the children by other agencies, i. e., in hospitals, private contract dentists and appointed dentists.

"The need and worth of dental treatment is properly acknowledged in the armies and navies of the United States, of Great Britain, of Germany, of France and of Austria.

"Yet, this country, in respect to the great industrial population, is hypnotised with the idea that since this is 'the land of the free and the home of the brave,' we are God's chosen people, and over-worked Providence will 'make good' in the end.

"The pageant of progress passes as we watch ignoring, if not ignorant, of present conditions and the spirit of the times.

"Numerous as are the instances of individual skill, we, as an example of united, sustained, professional public effort, are a joke. Rather the most paradoxical, provincial group of professional men in the world.

"We, seemingly, in some departments, have anaesthetised our judgment as to the direction of progressive professional achievement. We have failed, apparently, to sustain and to follow up in fields of scientific research and experimentation and public service, our late distinctly supreme inventive and empirical attainments.

"In Germany, England, Austria, and France, scientific research and experimentation have raised high the level of technical skill, not only in the sphere of industry, but also in medicine, surgery, chemistry, and the allied sciences. It may be said with equal truth, that the same is being accomplished for dentistry.

"True, a beginning has been made in Philadelphia of an institute that bids fair to be the finest of its kind in the world. There, it is planned, scientific research and experimentation and technical instruction may be properly carried on. If dentistry is to come into its own, there needs to be not one, but several such institutes and these preceded by extensive and intensive preliminary technical education and practice."

Most of this arraignment is entirely justified, for it is essential that this scientific work be done and well done. By all means let us have more institutions for dental research. The Forsyth institution in Boston, and the Evans Memorial in Philadelphia, which will to all intents and purposes be part of the University of Pennsylvania, will give the East a good beginning. But Illinois has not been

accustomed to follow. Let us begin a campaign right now that will result in the building of such an institution in Chicago, and its proper endowment and support. There must be men to do this work, sufficiently compensated that they may devote their entire time and energy to research, for although this may be a labor of love, one must live.

There is still much to be learned about caries of the teeth; and dietetics, which plays a most important part in these conditions, has had almost no consideration up to the present. The confines of the work of Dr. Pickerill should be widened and investigations carried on in this "Melting Pot" of the races that will give us definite data. We are dealing in generalities every day. We know there is an enormously increased per capita consumption of sugar and other carbohydrates every year; we feel that an excess of proteids eventually affects the teeth, but let us have facts.

We must have experimental classes of school children to determine the increase in mental and physical efficiency through attention to their dental needs.

Let there not by any means be a lessening of enthusiasm over oral hygiene in public schools. We have only begun our work and, as in all humanitarian projects, it may take years of campaigning as well as our scientific proofs to place this work on its proper plane as a civic institution.

This work must not be considered so much a charity as a civic economy. Relief of existent conditions means conservation of health and efficiency,—a stronger, healthier race, as against an inevitable deterioration. Disease is more easily checked and physical defects more easily remedied in childhood than later, and since children gathered together in schools are more easily reached than in their homes, medical inspection, which includes, of course, dental inspection, is manifestly to be desired. We have offered to cooperate with the medical profession in procuring either permissive or mandatory legislation with regard to this matter, but without apparent progress. Now let us take the necessary steps ourselves and obtain what results we may. Let us continue our efforts in the children's behalf and let us confirm our assertions as to the need and value of this work and put it into practice as true exponents of civic and state economy.

DR. C. B. WARNER, Urbana:

We are to be congratulated on the very scholarly paper given

by our president. I shall confine my remarks to two points he brought out.

The first point he mentioned was with reference to legal protection against malpractice suits. There is not a dentist in this audience but what is liable at some time to a malpractice suit. A slip of the finger involving some of the soft tissues of the mouth, an accident which may occur to any one of us in extraction, might bring to the patient's notice the idea that the dentist was incompetent and this would serve as a basis for starting a civil suit for malpractice. The serious nature of malpractice suits occurred to me some two or three years ago, and since then I have looked into the matter a little. It would not be a difficult plan to establish protection among the members of our state society against malpractice suits, because there is already an organization protecting physicians in such cases. I was at a meeting some two years ago when Dr. Harold N. Moyer of Chicago, who is chairman of the Committee on Defense of Members of the Illinois State Medical Society, made some remarks in regard to malpractice suits. Dr. Moyer very generously told all he knew about the work of his committee, and I have tried to see some papers connected with it. In the five years that this committee has been operating the Illinois State Medical Society has successfully defended 199 suits of malpractice against its members. The society has lost but one suit out of that number. That man who lost had to pay a fine of \$100, and Dr. Moyer assured me at the time that the amount need not have been paid; that he wanted to appeal the case, as he felt that the physician could win, but he wanted to pay the \$100 rather than to go on with legal proceedings. Dr. Moyer says that if the Illinois State Dental Society should undertake defenses of this kind, it will cost on an average about \$1 per member per year. There are insurance companies that will protect you, but you have to pay them \$15 a year. In other words, we ought to adopt in this society a few of the things labor unions have found to be of advantage. These labor unions will do a great many things collectively which they cannot do individually. There is one difference between the policy issued by an insurance company against a civil malpractice suit and the service that is given by this committee in the Illinois State Medical Society. The difference is this: While the Medical Society will defend a suit, if you are found guilty of malpractice you must pay the fine yourself; whereas insurance companies will pay the fine for you, but

Dr. Moyer assured me, if all the members of the Illinois State Dental Society would pay \$10 the first year, it would provide a fund which would take care of all fines for time immemorial; that is, \$10 the first year, and a dollar a year after that will pay all fines and all expenses of legal suits. He went further and said: If the Illinois State Dental Society should conclude that they want to do a thing of this kind, he would be glad to have them cooperate with the medical profession. He showed me most of his papers and the evidence taken in civil malpractice suits for the past five years. He claimed that this evidence is invaluable; that the insurance companies have asked him for it repeatedly so that they could use it in their malpractice suits, but he has refused to furnish it to them, claiming it was the property of the Illinois State Medical Society. He has had more experience in that regard than any insurance company in the world, because of the large number of physicians involved in malpractice suits. He urged and proposed that the Illinois State Dental Society should come in and cooperate with the Illinois State Medical Society. He also suggested that the Illinois Homeopathic Society likewise come in, forming a committee of the three state associations, thus protecting all homeopathic physicians, all regular physicians, and all dentists through one committee, and each organization would have one member on the committee to have charge of it, and each would have access to all the evidence and all the experience this committee has gained in the last five years. That is a fair proposition in case we want to undertake anything of this kind, and we could not do anything better than to cooperate with physicians. I think the recommendation of our president along that line is very good.

Another point I want to make is with reference to the matter of free infirmaries. I do not know of a place where a dentist can be more imposed upon than in doing free work. The idea of having a school nurse to recommend these people is very good. I think a still better one would be to cooperate with the United Charities which have an organization in every large city and in a great many of the smaller towns. They have trained secretaries whose business it is to go out and investigate families and find out whether they are worthy of charity or not, and whether they can pay for dental work. Every dentist in this age owes a certain amount to humanity. As a rule, dentists are not well fixed financially as are men in other lines of business, because they can only earn money

by the work they do. They cannot have clerks working for them. They depend upon their own efforts and the life of a dentist in a professional capacity is not very long. He must lay aside a little from his own income so that when old age comes upon him, he will not be required to go to one of the homes for the aged, which Dr. Waltz spoke of in his address. As I have said, every dentist owes a certain amount to humanity. The proposition which should appeal to the United Charities is this: Every dentist should make a substantial contribution to the United Charities. For instance, a man in ordinary circumstances ought to be able to give \$15, \$25 or \$30. If every dentist gave that amount in cash, the dentists could be excused from charitable service. The plan that has been recommended by the United Charities is this: Every dentist in the community shall donate \$35 or \$40 and when a trained assistant goes into a family and finds the family is in need, they will recommend that the patient or patients go to a dentist. The dentist makes a regular charge for the work he does, and the bill is given to the United Charities, and the United Charities credits the dentist with what he has done against the subscription he has made. Every dentist, if he can give a patient charity service in work instead of money, will be able to do better. I think the United Charities, with its trained assistants, can make a more vigorous and careful and exact investigation than we can do, and not only that, the United Charities can keep a large card catalog of families so that they know exactly the situation. When they know whether they have applied before and to whom they have applied, the United Charities would be willing to give of their own money in connection with this work, so that it will not all come from the dentists. I would suggest that the United Charities be asked to cooperate with the dentists in this regard.

DR. GEO. A. MILLS, Kankakee:

The address of our president mentioned two points that belong exclusively to Illinois. The first we all know, the system of organization, or the "Illinois Plan." The second is not so well known. It is the method of caring for the inmates in state institutions. Of this I will first give you a bit of history, then show you how Illinois compares with other states.

At various times in the past, some dental work has been done in the hospital at Kankakee. It would be carried on for a while and then dropped. In my discussion I will speak of the service as was started at a joint meeting of the various superintendents, the asso-

ciated charities and the Civil Service Commission. The first service was established August 1, 1907, at Bartonville by Superintendent Dr. George Zellers. Dr. Walter J. Weatherwax of this city, being the first dentist to enter the service. This service was established as a visiting service. The first civil service examination was held October 24, 1907, and was taken by Drs. W. J. Weatherwax, C. M. Sherril of Springfield, and myself.

I was certified to Kankakee in December, 1907. Dr. Greene, who was the superintendent at that time, said that he believed that the institution needed a resident dentist, who would give his whole time to the work, so we started it that way. As far as we could ever learn Kankakee was the first institution anywhere to care for the work in this manner.

At the time the work was started at Kankakee, each institution was managed by the superintendent and a board of trustees, consisting of three men. There being seventeen institutions, it can readily be seen that there would be various methods of management. Especially was this true in regard to the dental work. I believe that up until the time that the board of administration took over the management of the various institutions, that, besides the two already mentioned, the Hospital for the Insane at Jacksonville was the only one of the seventeen to have dental service. At Jacksonville the dentist gave one-half of each day to the institution, the other half to his private practice. So we had three places with dentists and three different methods.

In 1909 the law was passed creating what is called the board of administration. That is a board of five members, who have charge of the seventeen institutions. This board took active charge January 1, 1910. They gradually appointed more dentists, until we have the list as was read to you. Beginning April 1 of this year, a set of uniform rules governing the dental work was adopted by the board. A few of these have been read to you. Under these new rules, each patient is given all needed treatments of teeth or gums, cleaning, and the teeth filled with amalgam or the various cements. The prices as charged for gold and plate work, as read to you, I believe to be quite reasonable.

Where a dentist gives his entire time to the service, he is not allowed to engage in any private practice. In this way he can not use his evenings to build up a practice and enter into competition with local dentists.

The new rules are such as to cover all phases of the work, but more men are needed. My ideas are, that there should be one man for every fifteen hundred adult patients. You must remember that an institution that has fifteen hundred patients has a moving population. From April 1 until the evening of the 28th, we admitted one hundred and twenty-two new cases and readmitted fourteen. Of the new admissions most of them needed something I would have enough dentists to fully care for the new cases and then have time to see each mouth at least once a year. In an institution for children one man could take care of the schools for the blind and the deaf and dumb, both being located at Jacksonville. At St. Charles and Geneva, I believe that each place should have a man, as the inmates are young and are at just the age when the teeth decay the most rapidly. These children, coming from homes where they have received no care or instruction along these lines and often having diseased and illfed bodies, naturally are still less able to resist the ravages of decay than are normal children.

At Geneva a rule is followed that is a most admirable one. When a girl is going to leave the institution, Dr. Wolson is notified. He at once proceeds to place her mouth in the best possible condition, so that when she leaves her mouth is in as good a condition as it can be made.

It is easy to imagine that all that is necessary is for the board of administration to start a complete service at once and have it settled for good and all. So far the dentists have not sought for these places, so at present there are several vacancies existing.

Then the matter of expense is one to consider. The appropriations are none too large and the tendency of the legislature is to make them as small as possible, so the members can go before their constituents and show how they have helped to keep the taxes down, and we know many people consider the teeth of no importance anyway, so naturally the establishing of the complete dental service must be slow.

Here is where the Dental Society can help. We can arouse interest among the people along these lines, and show the necessity for such work. The superintendents of the various institutions all favor dental service. The ones who do not have it are asking for it. The superintendent at Kankakee, Dr. Wilgus, has ever been ready to help me out on any part of the work and has shown an unfailing interest in it. The board of administration also have

helped it, especially Col. F. D. Whipp and Dr. F. P. Norbury, to whom thanks are especially due for our new rules, which place the dentists in state institutions on the same plane with the rest of the medical service.

The first of this month I met the Hon. Fred J. Kern, of Belleville, who is the new president of the board. In speaking of the dental service he said: "I consider it of supreme importance and if necessary I would rather have one less physician than do without a dentist."

Several weeks ago I wrote to the boards of administration of the following states: Iowa, Kansas, Minnesota, New York and Massachusetts. Also the Government Hospital for the Insane at Washington, D. C., asking what care was given the inmates in the institutions under their charge, also if there was a uniform set of rules to govern this work. I will briefly give you a summary of the answers received.

In Iowa each institution, if possible, secures some new graduate for the summer months, except the industrial schools, where the children are taken to local dentists. The board at times has considered some other method but as they feel reasonably well satisfied, have taken no definite steps.

In Kansas they have no regular dentists but the necessary work is cared for by the physicians in charge as best they can. You all know what that means. The letter says: "If absolutely necessary, the patient is taken to some dentist and the expense borne by the friends, if they have no friends, the state pays the charges."

In Minnesota there has been no attention given, except to such cases who had money and could be taken to the local dentists. They are now about to employ one man, who will be stationed at the state reformatory.

In New York, the state which has the largest population of insane, there are two hospitals that have resident dentists, the others have a visiting service.

I will read you in full the letter from Massachusetts:

"Dear Doctor: Answering your inquiry relative to dental work in our state institutions, I am able to say that none of our institutions has a regular resident dentist. At several of the institutions a dentist visits them one or two days a week. Two institutions have a dentist on the staff and he devotes one or two days a week to patients at the institution.

"At one institution a dentist is employed during the summer months and the remainder of the year a local dentist attends patients.

"There is no regular regulation regarding dental service but each institution has made such arrangement for its own service as seemed desirable or available.

"Very truly yours,

"(Signed) Charles E. Thompson,

"Executive Officer."

The Government Hospital has an interne who devotes his whole time to the work at a salary of \$50.00 per month, besides having a visiting dentist one day a week at a salary of \$8.00 per day.

I believe that the best interest of the patients and the institution require a dentist to give his entire time to the work and be a man of experience, as many persons present themselves who will not give you any help in making a diagnosis.

It seems to me that dentists in the state work are a benefit to every man in practice. Many of our employes have never given their teeth any care. Often when they bring a patient to the office, they will speak about their own teeth and ask about something. I always advise them as best I can and recommend that they consult some local dentist and have the mouth put in proper condition. Many of them do this.

These people on leaving the institution return to their homes and no doubt discuss the matter with their friends and neighbors. Also people coming to visit their friends in the institution and find that they have received dental care, naturally speak of it. As an instance of this, one Sunday afternoon at one of our band concerts two women were sitting close to me. They had been visiting some friend or relative. The one mentioned the fact that she did not know the patients received any dental care, and the one who they had been to visit had been having her teeth fixed at that time. From that they drifted on to their own dental conditions and when the music started again they were still talking dentistry. How far such talks reach, we of course can not tell, but certainly they interest some one.

Many people say, "Why should crazy persons have their teeth fixed?" Just because a man thinks he has discovered perpetual motion, or a woman thinks that she is the Queen of Sheba, is no reason they should be allowed to suffer from an aching tooth. Or if a boy or girl who was born and raised in a home of poverty and

ignorance, or worse, should naturally end in one of our homes for delinquents, why should they not receive the best that the state can give them?

I have tried to show you some of the main features of this work. No one realizes as well as I do, how much has been left unsaid, but I hope that what little has been said will give you enough insight to arouse your interest and sympathy and keep it such that no backward step will be allowed, but that Illinois may advance along this line, so that other states will have to come to us for another "Illinois Plan."

DR. ARTHUR D. BLACK, Chicago:

I did not expect to be called upon to discuss this address, and am not prepared to do so. However, I will speak briefly on one or two points in which I am particularly interested.

The address is an excellent one, in that it brings before us a good resumé of many conditions in which we as a society should be much interested.

In following what Dr. Mills has just said, I want to say a word regarding dental service in the state institutions and make a brief comparison, if possible, of the possibilities of the application of the development of that service to the development of the matter of school inspection and dental clinics. There was discussed in this society a few years ago the question of obtaining legislation in order to establish dental service in our state schools, and I remember as a result of that discussion and some talk in committee, it was determined that more might be accomplished by the bringing of proper influence to bear on the powers that existed under present laws rather than attempt to get special legislation for the purpose. Within six years Illinois has developed a dental service in our state institutions which is so far in advance of that now applied in any other state, that I think the course pursued was certainly well taken.

Illinois stands today with a dental service in our state institutions which is considered and recognized as very important, and the position of the dentist in such institutions is regarded of as much importance as the position of medical men connected with them, a condition that exists nowhere else, and which you all know was fought for years and years in the dental service in the army and navy. We have accomplished in this state a good deal with that service, with the natural opposition which could come from medical men, not that the medical profession was against the service, but

there is always objection to be overcome in placing such a service on an equality with medical men.

I want to say in passing that this society owes a great deal to Mr. W. W. Hilton, president of the Civil Service Commission of this state, to Mr. Mason, its secretary, to Dr. Green, to Dr. Norbury, and to several other men connected with the administration and the public service, for the interest they have taken in this work. Incidentally, too, this society is under obligation to Dr. Mills and to a less extent to the other men who have been active in this service. These men took this service from the available fund that might give to them \$25 a month. They did not take the service for what there was in it. They took it for the love of it, and the work done in these institutions has been shown to be so valuable that the state cannot get along without it. That of itself will convince the people more than anything else of what good results are being obtained by actual work.

The question naturally arises in my mind as to whether or not there now exists power to establish dental inspection and dental clinics in our schools without new legislation. I do not know whether it is a fact or not, but I am very much inclined to believe that if the proper officials were properly approached, these things might be brought about in a much more simple way than they could be by securing new legislation.

In passing, I would like to say that in securing such legislation, I question very much whether we will gain anything by co-operating with the Illinois State Medical Society, because of the fact that they are divided among themselves into so many factions and are unable to get the legislation they have attempted to secure. I question whether or not this society should not alone go before the Legislature and seek to secure legislation which would provide for dental inspection, and we might ask for medical inspection with it, and get a bill passed more readily than by joining hands with the Illinois State Medical Society, and I say that with all due respect and deference to the wishes of the members of the Illinois State Dental Society.

There are two other points I would like to consider briefly, and one is the matter of reading dental journals, and the other the establishment of a bureau for scientific research. We all recognize the fact that dentists ought to study more. There is, it seems to me, a definite and logical relation that exists between reading and

studying and research; that to have a man who is a research man, he must in the beginning be sufficiently interested in his profession to read the journals; that following the reading of these journals, if he is at all logical, he would naturally get together the articles that are published, to assemble them, to get out of them those things which are really true and of value to the profession. That is what is intended by the establishment in this society a few years ago of a post graduate course of study, to develop the idea of reading and assembling what is read and taking out from it those things which are good. Personally, I thought it was a great mistake for this society to drop the post graduate study plan because of the fact it was not taken up actively by many of the local societies. It should not have been expected that it would be taken up actively by many of them. If it was taken up by a few and gradually by one or two more, we would develop men in the first stage towards research work. We are not going to be able to buy research workers, and while I do not wish to be understood as throwing cold water on the proposition of the National Dental Association in approving of the raising of funds to be spent in research, I believe they are going at it from the wrong end. The research man is one who necessarily develops himself to the point of research work, and I believe that there are few men who have reached that point, who have developed the fact they have the ability of researchers. To my mind the matter of funds is the least important thing that should concern us in the development of research work. It is the researchers we need more than the funds, and I wish to leave that idea with you in relation to a post graduate study course in the developing of reading and in developing research men. This society can do more to further the progress of scientific study by the prosecution of a post graduate study course and of all other things which will tend to make our men take a more active interest in the work of the local societies and through them in this society than they can by raising funds for that purpose.

DR. M. R. HARNED, Rockford:

This is one of the best addresses we have ever had in this society, but I rise to make a correction with regard to what was said concerning Rockford and its work in connection with a free dental dispensary.

About twelve years ago we started a free dental dispensary, which, I believe, was the first one started in the United States. It

was started through a paper presented at Quincy by Dr. Helm upon the subject of "What Will We Do With the Teeth of the Very Poor?" And as a result of that paper we established a free dental dispensary in one of our hospitals, which we maintained for two years, each dentist taking turns in giving that service. We feel that we did a great deal of good. However, we failed by reason of the fact that the people were not ready for it. The important thing we must do as a profession is to prepare ourselves with adequate and sufficient information so that we can go before the people and create a demand for this sort of thing before we can render them service.

As Dr. Black has said with regard to research problems, we are beginning at the wrong end. We have not sufficient information to go before the public, to create a demand for either public inspection or a public dispensary. When I say that, I do not mean something cannot be accomplished, but it will be inadequate.

I wish to say further, as a result of that policy, we have been compelled to change our plans, and at the present time we as a local society are cooperating with our public school inspection committee. We have a committee for public school inspection consisting of one physician and competent nurses who make a rather superficial examination, but enough it seems to me for the time. We are cooperating with them. We are cooperating with a Probation Officer in relation with the sick. They refer the patients to the various dentists as the cases require. We are also cooperating with the organized charities.

I wish to speak of one thing more which I feel is along the line of this discussion, and that is the little work we have been undertaking with the Northern Illinois Dental Society, which is intended to find out whether or not we have any researchers in our midst. We are attempting to get our members to make records of cases. We are starting on the subject of gingivitis, which Dr. Black took up a few years ago. We have reduced it to 10 questions, and we are going to see if we have some men who will collect statistics. We need more statistics of the character that Dr. Ebersole has given us, furnishing more definite information.

DR. WALTZ (closing):

I wish to thank the members very much for the cordial way in which they received my address, and for the liberal and free discussion on it

AMERICAN DENTAL SOCIETY OF EUROPE.

FORTIETH ANNUAL MEETING HELD AT FLORENCE, ITALY,
MARCH 21-24, 1913.

DISCUSSION OF THE PAPER OF PROF. A. CHIAVARO, "NEW METHODS OF
MANDIBULAR PROSTHESIS."

DR. F. AGUILAR, Madrid:

Desired to say a few words of encouragement and gratitude to Prof. Chiavaro for bringing forward a subject which merited the attention of dentists more and more every day. It must not be forgotten that dentistry had been the principal contributor to general surgery in the way of artificial restoration. The work of Martin thirty years ago was that of a dentist, and since that time sur-



geons all over the world had employed similar systems of restoring portions of the lost skeleton by artificial pieces without giving sufficient merit to the originators of the process. He had occasion to visit Dr. Carrell a few months ago, who was using pieces of rubber and metal, especially tin, but Dr. Carrell did not know that dentists thirty years ago proposed the employment of those artificial pieces for use in restoring a portion of the lost skeleton introduced at the moment of the operation. It was well-known that while European literature on the point was very rich, American books referred very little to such surgical processes. The Germans had made great improvements on Martin's method, and he recommended Prof. Chiavaro to read a pamphlet by Dr. Hahl in which he proposed something similar to the capping of shell crowns. The system was very original, and he would endeavor to give an idea of what Dr. Hahl proposed. Dr. Hahl's method was only applicable where the front part of the mandible was to be re-sected, and it was especially useful in connection with tumors. It must not be forgotten that there were certain injuries, such as gun shots, which resulted in necrosis of the bone, which compelled the surgeon to resect a portion of the bone. In that case there was no danger of the recurrence of a

tumor by the irritation of the appliance. Hahl's method consisted in constructing several crowns or shells.

If (a) was the portion to the bone to be resected he placed the shells in position before the operation; and taking an impression of the mouth with the shells he constructed a heavy piece of wire, which was attached in the same way as a removable bridge to the shells. Immediately the resection of the bone was made and before the suturing of the wound, a heavy platinum wire was inserted forming a bridge like a removable bridge between the two shells, in that way preventing the movement of the two fragments, because in cases of resection of the mandible of that type it was not one side that moved, but both sides towards the center, producing a very ugly deformity of the face which it was very difficult to reduce afterwards. The cicatricial retraction was so powerful that there were no artificial means of distending the tissues afterwards. Martin's method pretended to avoid that cicatricial retraction and the deformity of the face. Hahl's method was a very practical one, being something on the principle of the method so cleverly and ingeniously invented by Prof. Chiavaro. He thanked the author for bringing the paper forward, and trusted that in the future many papers of a similar nature would be forthcoming, because they were the means of dentists getting in contact with the general surgeons, and showing that dentistry could contribute to the welfare of patients not only within the limited field of the teeth, but in the construction of ingenious appliances similar to those shown by Professor Chiavaro.

PROF. CHIAVARO:

In reply, thanked Dr. Aguilar for the kind remarks he had made. Before leaving home he read an article by Dr. Groebel of Kiel which appeared in the *Deutsche med. Wochenschrift*, of January, 1913, which stated that in a case, not of a tumor, but of accident such as that referred to by Dr. Aguilar he took a piece of the tenth rib and put it in between the two stumps of the jawbone, and instead of the jawbone he used the rib in place of the piece which was cut away. Such adeoplastic operations were done in America by Carrell, and he also remembered an interesting case in which a piece of perone was inserted in place of the cuboid bone. Adeoplastic operations were among the most interesting in surgery, and it had been found that a piece of even a rib of an animal would act just as well as the rib of a man in general surgery. In his paper he had dealt only with cases of tumors and the devices that could

be used by patients who had the misfortune to be operated upon for tumors of the lower jawbone.

DISCUSSION OF THE PAPER BY PROFESSOR A. CHIAVARO ON "SCARLET RED, AND FILLING OF PATHOLOGICAL BONE CAVITIES, APPLIED TO DENTISTRY."

DR. W. J. YOUNGER, Paris:

In opening the discussion asked Dr. Chiavaro whether he had used his preparation in pyorrhoeal pockets, and if so what the result had been.

DR. W. A. SPRING, Dresden:

Enquired whether the opening eventually became entirely filled in with good bone.

DR. W. HIRSCHFELD, Paris:

Said that if he understood the Author aright he recommended one of his preparations for perforated roots and teeth. He was especially interested in the subject of perforated teeth, and two years ago he presented in Dresden a paper dealing with a method of filling those perforated crown cavities with pieces of porcelain. He was very happy to know that a more simple method than his own had been evolved which was sure to give good results, but he would like to ask those present if any of them had used the method he described of closing the perforated crowns with porcelain.

DR. W. A. SPRING, Dresden:

Said that since Dr. Hirschfeld gave his paper describing the method of filling such a perforation with porcelain he had had occasion to put it to the practical test and had been delighted with the result. As Dr. Hirschfeld described, he made a thorough positive opening, increasing the size considerably and getting thereby a firm edge; he then fitted a porcelain rod to the opening, made a cut in it and broke it off. He had obtained more satisfaction from that method than from any other he had ever used.

DR. H. L. SCHAFFNER, Florence:

Said he presumed it was cemented on.

DR. SPRING:

Replied in the affirmative.

DR. A. PIPERNO, Rome:

Said he was very much interested in the paper of Dr. Hirschfeld's to which reference had been made. He used the same principle in filling cavities in big molars with copper amalgam and ob-

tained very good results. He wished to ask Professor Chiavaro whether he had ever tried to fill the pathological bone cavities with copper amalgams. He had tried it in one or two cases, particularly in the case of a lady who had trouble with the first bicuspid, and he was not successful. He did not want to put a crown on the root because of its pathological state. Four months ago he successfully tried to push a copper amalgam up over the root. He would like to know whether Dr. Chiavaro had any information on that method of filling with copper amalgam. He was particularly interested in copper amalgam because of the disinfective properties of copper. During the last epidemic of cholera in Italy a member of the Institute of Hygiene pointed out to him the great disinfective power of copper and nickel money and mentioned the fact that the cholera bacteria would die if placed in contact with them.

DR. O. SOLBRIG, Paris:

Enquired how Professor Chiavaro used his paste. Was it used as paraffin was applied with a heated silver point when dealing with a perforated root?

DR. W. HIRSCHFELD, Paris:

Asked whether in a case where a cavity which was very hard of access had been devitalized, parts of the pulp of the roots being difficult to get at, the Author would leave some of his paste in for the purpose of preventing the tooth subsequently getting sensitive and irritation being produced by the formation of pus.

DR. H. J. MOORE, Frankfort:

Asked whether in cases of amputation of the apex of the root the wound could be packed with paste.

PROF. A. CHIAVARO, Rome:

In reply said that Dr. Younger had enquired if he used the paste in the destruction of marginal alveolar process. It was useless to use it in that direction, because the paste would be in contact with the exterior. His paste was a filling of bone plug inside the tissues. He had read lately that some dentists were using it in that direction and that they were very pleased with it. Dr. Piperno had referred to the question of copper amalgam. That no doubt had a great disinfecting power, but in view of the fact that the paste was so beautifully retained by the tissues he would not like to use another substance which could not be smooth inside the tissues. He thought a substance like copper amalgam upon the surface of the root of a tooth could not be so suitable to the tissues as a paste

made of absorbable substances. When a scar formed some surgeons injected paraffin below it, which was intended to stay, Nature keeping it in place, and the tissues were not irritated by it. The paste, however, also stayed there, and subsequently new active tissue would be formed in place of it. Dr. Spring asked whether new tissue would be formed. Bone tissue could be formed only by periosteum. Usually the bone tissue was replaced by new connective tissue just like a scar. Only the epithelium regenerated, but it was shown plainly that bone muscle regenerated and the other tissues were replaced by new connective tissue which filled up the space. In reply to Dr. Solbrig's question, he would not use paraffin for the same reason. He would prefer to use whale fat instead of paraffin because it was absorbable. The paste had been used in connection with amputation of the root, the paste being used as a bone plug in the big opening. The wound was stitched up or allowed to close by itself and the tissues did not react against it. On the contrary the wound subsequently closed up, the paste would be absorbed and and in place of it new connective tissue would be formed.

DR. SPRING:

Enquired what length of time would elapse before that took place?

PROF. CHIAVARO:

Said the length of time depended on many things, such as the size of the cavity, the age of the patient and the size of the mouth, so that it was impossible to state a definite period. It was only a year since he first commenced to perform the work and that was not time to say how long the connecting tissue took to form in place of the paste. He read with much interest the paper to which Dr. Hirschfeld referred and also a paper given at the last meeting by Dr. Spaulding, in which lead was used instead of porcelain. Forty years experience had been obtained on the subject and the statement was then made by doctors that they had been using lead for the plugging of perforated root canals and it had almost the same disinfecting action as copper amalgam. In his view a paste would act very much better than a non-absorbable substance. If it was of the same consistency as the surrounding tissues he thought Nature would prefer its use to harder substances such as copper amalgam or lead. The paste could be put in place in a minute, while to make a proper fitting of a porcelain or lead plug, would take considerably more time.

CHICAGO DENTAL SOCIETY.

A regular meeting was held February 18, 1913, with the President, DR. JAMES H. PROTHERO, in the chair.

Dr. F. E. Roach delivered an illustrated lecture on "Newer Phases of Crown and Bridge Work."

DISCUSSION.

DR. R. E. MACBOYLE:

Mr. President, Dr. Roach, Ladies and Gentlemen: If Dr. Roach was not so tired, I would feel like suggesting that he continue this lecture, so that we could all continue enjoying ourselves. But I know that he has talked quite a while and is tired.

I am going to consider, in the first place, the phase of crown and bridge work that Dr. Roach gave us near the end of his lecture, and that is the proposition of using saddles in connection with fixed bridge work. In this day and age it does not do for a man to come out and say that he absolutely knows a thing unless it has been logically proven. I refer to myself when I say that, and not to Dr. Roach. It has not been proven to me by any means that the proper principle is involved when we use a saddle in connection with a fixed bridge. There is a difference between belief and absolute knowledge, and I am going to tell you what I believe at the present time regarding this proposition, and as the practical application and experience come to me along the line of saddles, with fixed bridges, I reserve the right to change that belief. A man may believe a thing today to be true, and then possibly within a year or sometime later, it proves simply a belief. There is a great difference between belief and absolute knowledge.

I have never favored the idea of a saddle in connection with a fixed bridge, and while this is a new idea which has been advanced by Dr. Roach, who is a man of great reputation and wide experience, we must give it considerable thought coming from a source of that kind. To me there are several phases of the matter of a saddle beneath a fixed bridge or in connection with it which I doubt, at the present time, whether or not it is the correct principle. In my own work, and the work I have been connected with, I hesitate to allow anything in the way of alloyed gold to come in contact with the mucous membrane of the mouth. I may be too radical in that statement, but I hesitate, and when I construct a bridge

with any alloyed gold or even pure gold coming in contact with the mucous membrane of the mouth, I feel that possibly I am not doing right.

In the construction of upper bridges I very often use the cast cusp, with porcelain facing, allowing nothing but the porcelain to come in contact with the mucous membrane, and I find when those are, what I consider properly constructed, the results are generally very good.

In a lower bridge it has been my practice not to allow dummies to touch the ridge. I always leave a self-cleansing space beneath these dummies. I figure that I want to put a bridge in the mouth that the patients can clean, whether they will or not. The point is brought up sometimes that a bridge of that character, that does not touch the gum is not kept clean. I contend that a patient who will not clean a bridge of that kind, provided these dummies are properly shaped, will not clean any other kind of bridge; consequently I have got to be convinced as yet, in spite of the evidence Dr. Roach gives us, that the saddle is indicated in fixed bridge work. I believe if I were to use a saddle in a fixed bridge, it would be indicated more in the upper than in the lower, on account of so many narrow lower ridges with the great amount of soft tissue there very often, a narrow ridge that, it seems to me, would be very hard to fit a saddle to, which would not be irritating. In this regard there are a few points I want to speak of, first, one advantage of the saddle in bridge work is that it is a comfort to the patient. My experience is that in all bridge work that I have ever come in contact with and that I have placed in the mouth, a self-cleansing bridge with a space beneath, in a lower, and fitted without too much contact in the upper; for the first week or two weeks, perhaps, the patient will tell you that he has a little trouble with small particles of food lodging and has to take it out. My experience is that this complaint is only for the first ten days, and very often you never hear such a complaint. In the matter of comfort of the saddle in fixed bridge work, it is a question whether it is much of a factor, because we all know that many patients become accustomed to wearing almost anything in the mouth, so that a self-cleansing bridge, properly constructed, when a patient becomes accustomed to it, if it is made so that it can be cleansed, will be a source of comfort. Of course, a self-cleansing bridge is a misnomer to a great degree. I never put a bridge in the mouth

without instructing the patient how to clean it, and I never put a bridge in the mouth that cannot be cleaned.

The most important question in the proposition of the saddle and fixed bridge is what effect does it have on the mucous membrane? Dr. Roach did not go into that, because he has had so much experience with it and has obtained such good results, and he is confident in his own mind and is perfectly honest and sincere in telling us that he considers it the proper method. But I consider that it is not the proper method for the average practitioner. That is my belief at this time. I can see where there would be a great deal of trouble resulting if it was put into general practice by the average dentist.

Another advantage spoken of is in mastication. It keeps food where it belongs. In a lower bridge, if you make the dummies long enough, still leaving a self-cleansing space beneath it, so that it can be washed out, the tongue at lingual, and the buccinator muscles at the buccal keep the food above the occlusal surface of the teeth. I believe I am right in that statement, and I find by inquiring of patients wearing bridges of that construction for a while that they have no complaint to make about the discomfort of them.

I would like to speak now of some of the possible disadvantages. It appeals to me as possible that a saddle may so firmly press as to partially imbed itself into the surface of the tender mucous membrane. I have removed several saddle bridges in my time. I have seen others that have been removed, but not lately. They were the ones that were put in when we had a big porcelain bridge wave, and I have never yet seen a bridge removed with the saddle where the mucous membrane was not in a congested condition. That congested condition is abnormal, and to what extent it may lead to serious trouble I do not think any of us are able to say. The point of the abnormal condition of the mucous membrane under the saddle of a bridge is one that has got to be considered very carefully, because I do not believe that a continued abnormal condition of any tissue is a good thing. Where would be the limit? There is from the mucous membrane, an exudate a secretion that is continuous, and for the sake of cleanliness and normal conditions it must not be confined. It must have means of escape. Is it good for us to confine under the pressure of a saddle that secretion, that exudate from the mucous membrane? These are questions for consideration in relation to this subject.

If we find that a saddle is the correct idea in fixed bridge work by careful adaptation, I do not believe that alloyed gold will ever be the proper material. I believe that it will either be platinum or possibly porcelain. I can see the possibility in the indicated cases that Dr. Roach has spoken about of using porcelain in contact with the mucous membrane, but I certainly do not believe in the use of alloyed gold, because we all know by experience that it is an irritant to the mucous membrane, especially when it is compressed and held in firm contact with it. So I believe that if this is the proper principle, we are going to have different material besides alloyed gold.

There is another feature about the continued pressure of a metal upon the mucous membrane that I have noticed in some cases, and it has been the absorption of the tissue upon which it is pressing. If it is pressing against the tissue too hard and causing irritation, there is liable to be hypertrophy of tissue, which hangs around it, and when that condition exists you are liable to get infection.

Today I saw a case in which a bridge had been in the mouth for six years, an ordinary constructed bridge. The gold of dummies was touching the mucous membrane, but it was a so-called self-cleansing bridge. The patient presented with an infection, with hypertrophy over one of the dummies, touching the gum, with a large swelling and infection there. She had worn the bridge comfortably for six years, and it had never caused any trouble until the last few days. This case shows that a year, two years, or three years, may not be sufficient time to test the proposition of a saddle under a fixed bridge. The idea we must look to, first, is the permanence of the bridge, and from long-continued pressure on the gum we may have trouble.

I do not want to say that Dr. Roach has not given us something which is in advance, that is going to work out as a step in advance in bridge construction; but at the present time we must use a great deal of caution in connection with it.

In regard to the other features Dr. Roach has given us, I want to congratulate him on them. There are several that are very good. However, there are one or two I do not quite agree with. Before I mention those, however, I want to say, I believe that the department of crown and bridge work is the most abused department in dentistry. From my observation of various kinds of dental work

and of dental departments, crown and bridge work is certainly abused the most, and if I could make no other plea than to make one for more careful work in crown and bridge construction, then I would prefer to make that. The secret generally of our poor crown and bridge work, which in many cases is a menace to the lives of people wearing bridges, is due to faulty preparation of the abutments. There is no one who can possibly make a good bridge unless they prepare the abutments properly. That is the greatest factor in the poor bridge construction of which we see so much. There is certainly a great field for doing better work. We see so many crowns fitted, so many bridges that have to be removed, where the roots are half prepared, half of the bell-shape removed, and the band is crowded into the gum tissue and conditions cannot be anything but destructive.

Regarding the other phases of the subject Dr. Roach has spoken about, the technic of the preparation of a cast base crown in his hands may be all right, but from my observation and experience in bridge work, I do not hesitate to say that the great majority of dentists will get better results if they do not have to go to that exacting technic and so much of it that Dr. Roach described. Personally I always use a pure gold disc, swaged first to a cement model of end of root, and then carrying it to the mouth and burnishing it properly. I can then get the post in and solder it. I can see just exactly where the edge of that gold is. By the way, the preparation of the root is a little different. My method of preparing root for a cast base crown is that I do not shorten the root quite as much as Dr. Roach does, but round the periphery. I do not leave the base of the root at right angles with the long axis of the tooth, but round the periphery and dish the center some around the opening of the canal. I take an impression of the prepared root with modeling compound and fill with cement. The cement will harden in five minutes, then separate it from the modeling compound, and swage the pure gold over it. The advantage of swaging is, that it is more rigid than if you try to burnish it in the mouth. You can swage it to shape, then you can burnish it. You swage it, take it to the mouth, trim it, get the post soldered and burnish the margins, and by having the periphery of the root rounded you can burnish the edge of the pure gold disc just beneath the free margin of the gum with the thinnest kind of edge, using gauge .36 pure gold. From

that base you can build up your crown. In regard to the lingual extension of the root, you will find, if you try that technic in short bites or medium bites, you will have trouble in using it, unless you shorten the root too much. My experience is we have trouble in fitting a cast base crown in reasonably short bites. In my experience I find I have to groove the end of the root considerably in order to get the space I want and not to sacrifice too much of the porcelain. A method I often use, where I want extra support in a bandless crown is to use an extra post of possibly not larger than .18 gauge. You drill a canal lingually and to one side of the main canal, simply drill into the dentin not more than one-eighth of an inch. Insert a post not larger than 18, and if you have never tried it, do it, you will be surprised how much rigidity and how much extra strength that small extra post gives in a case of bandless crown. It adds great strength to it, and that is the method I use in case the root is a little weak, and I am making a bandless crown and want to add strength. In the small root it is impossible to do that, but in a small frail root, personally I use either a band or a half band crown. I am a firm believer in the banded crown where the band is properly fitted, and I feel most secure with a banded crown, and in bridge work and in bridge abutments I use a banded crown where it is possible. But, after all, gentlemen, it is a matter of personal equation in the technic of doing things. It does not matter so much how you do the work, or what your particular technic is, but it is the result that counts. Different men under different conditions do the same things in different ways. These different conditions have taught them to use different methods, and while Dr. Roach can get the results he has spoken of, some other men can do the work in a different way with a different technic, with equally good results. So it is the result we are after.

I do not quite agree with him in the matter of the cast back Richmond crown. The technic he showed us tonight in the hands of the average man would not be followed by as good results as with the old reliable method of fitting the band floor and post first, and building up and casting to that coping. The average man can get a better result than with so much delicate technical work which Dr. Roach gave us. Personally, I often use a good old fashioned Richmond solder back, and I expect to continue to use it in a great many cases.

I would like to speak of one point in regard to the old Richmond crown. A great many dentists object to the old soldered back Richmond crown on account of the facing breaking away. My observation and experience has been that where the facings break away, it is because they have not been half ground or properly ground, they do not sacrifice enough of the lingual aspect of that facing in order to protect it with the backing. I believe that to be the reason why these men have so much trouble with the ordinary Richmond crown, but it does not matter whether you cast the backing or swage it or burnish it and solder it, the results are practically the same, and personally I do use, very often the old fashioned Richmond crown, and in my hands I feel that in some cases I can get better results with it than I can by trying to cast the backing.

Dr. Roach gave us a very excellent idea when he spoke of fitting ready-made crowns. There is no question but what there are more roots sacrificed and lost through the improper fitting of what may be termed ready-made crowns than any other one source of which we know. It is a crown that men are careless with. They fit it, it looks pretty well at the labial, there being space at the lingual, the cement soon washes out, the result being decay and loss of the root. This method of fitting that crown is a fine one, and I am very glad indeed to have heard it.

I will not take any more of your time, but wish to congratulate Dr. Roach on what he has given us this evening, and I am sure we all appreciate it.

DR. G. WALTER DITTMAR:

We have listened to a very interesting lecture by Dr. Roach and a very good discussion on the part of Dr. MacBoyle. The hour is so late that I will not detain the Society long, and yet I feel there is a great deal to be said on the subject of this excellent lecture.

Dr. Roach started out in his opening remarks with this thought: "Foci of infection in the mouth which are caused by poor crown and bridge work." He unfortunately did not have time to elaborate on that subject as much as he should have done, and finally got off into technic, and spoke almost entirely of the technic of the various crown and bridge constructions. However, we all understand that many of the foci of infection found in the mouth are the result of illy constructed crowns and bridges; the result of poor technique.

Dr. MacBoyle spoke of the cause of these foci of infection

being due to improper preparation of the abutment teeth or roots. There is no question but that that is the greatest fault, namely, the improper treatment of those roots and the improper preparation of the abutments for the reception of crowns. For that reason, I shall speak of crown construction more than on bridge construction.

There are five things that every crown—in fact, every prosthetic piece that is put into the mouth—should possess. First, *It should be useful*. So often we see prosthetic work in the mouth that is not useful in its fullest sense. The second is durability. It should be built so that it is strong enough to stand the stress and attrition to which it is going to be subjected. Third, *It should be comfortable*. That is an important feature. Fourth, *It should be esthetic*. It should look well; there should be as little display of metal as is consistent with strength, together with the proper shape and shade of the teeth. Fifth, it should be as sanitary as it is possible to make it. These are five important points, viz.: It should be useful, durable, comfortable, esthetic, and as sanitary as possible.

Coming back to the crown there are seven points that a crown should have to do the best work. First, it must fit the root accurately, and that implies proper preparation of the root. After a band, or a crown if it has not a band, fits the root properly you have the first important requisite of that crown. The second thing is, it should have the proper contour. Here I am going to touch on a point which Dr. Roach wants me to touch on, namely, the proper contour of the crown. We must try to do as dentists one thing, and that is to follow out the plan of nature in the building of a crown, i. e., give the crown a natural form. If there are proximating teeth simply study the teeth on either side of the root we are going to crown and note the conditions there and try to reproduce them in the crown we are building, thus we will come pretty close to giving it a natural contour. Nature gives teeth contour to protect the gum septum, which lies over the thin enamel at the gingival portion, and if we contour our crowns buccally and lingually, so that the food will be deflected buccally on the lowers, and lingually on the uppers, we will by that contour, which was beautifully shown in the illustrations, have a convexity so that the food will be thrown off and will not hit the free gum septum. If the band fits well, the gum will stay in a healthy condition. The contour is a very important thing. A third essential is to have proper contact points. We all know the

importance of that. Dr. Roach brought out one point that has not been brought out to any great extent before, and that is the concavity gingivally of the contact points to allow more room for the gum septum. He also brought out a point which I want to elaborate on a little in the gaining of space where the teeth have dropped together, and it would be a long process to drive the teeth apart. He spoke of cutting away a portion of the root to narrow the root down in order to gain interproximal space. I have frequently done that for both crowns and inlays where I wished to gain space for the interproximal gum septum. I take a small fissure bur, going up into the tissues, trimming off as much as seems necessary, finishing with Prothero files, then fitting the inlay or crown to it. If you do not do that, you will have trouble with the interproximal space. A fourth essential is sufficient strength. That is an important thing. How often do we see crowns wear through, tear or break. The dentist ought not to put on a crown that does not stand well. If it has a short bite, I do not believe we ought to use porcelain, but use a porcelain faced crown on the anterior roots. If you have a long bite you have of course an ideal crown with the Davis, the Goslee or similar form of tooth in connection with a cast gold base.

Fifth, the proper masticating surface, the root which supports the crown oftentimes fails because the occlusal surface has not been shaped properly. How often have you seen—I know I have seen it very often—where the root is loose, due to nothing else but high cusps on the artificial crown and the opposing teeth striking the cusps in such a way that the tooth is driven buccally and lingually in every lateral movement of the opposing jaw, causing periodontal disease. Maybe the band fits all right and the crown was properly contoured. Maybe the contacts are all right, yet the crown failed; the root is loose because the occlusal surface is not right.

I agree with what Dr. Roach has said, that better dentistry should be done, and the best model upon which you can work is the mouth itself.

Dr. Roach endorses the technic of building the crown in the mouth of the patient, so that you get the occlusal surface to harmonize with the various movements of the jaw, and build the crown to fit that particular position. You get your alignment and occlusal surface and contour and contacts and get things right because you work to conditions in the mouth. The old fashioned way of taking

a wire measurement, or even making a band and sending it to the laboratory and letting the laboratory man make a crown for you is an abominable way of doing crown work, and it has cost millions of good roots. It is one cause for Hunter's article on this subject. The way to get the best crown is to build the crown so as to harmonize with natural conditions. Suppose you are making a crown for a person fifty years of age, if you send it to the laboratory man, he will carve up a beautiful occlusal surface or swage one from a die plate with nice cusps and grooves, things that may not be indicated. Sixth, it is very essential to see that it be properly finished, so that it does not irritate; and seventh, that there is proper fixation of the crown upon the root.

As most of you know, Dr. Roach and I office side by side, and I know the technic he has given you here is the exact technic that he carries out in his office. I have seen some beautiful results from the use of that technic. I have seen the saddle bridges he spoke of giving the nicest kind of results. I make some of these saddle bridges. I am not as enthusiastic as yet as Dr. Roach, but still I use them because I think they are indicated in places, and there is no question but that patients are always pleased with the feeling they get in the mouth from a saddle bridge, because it more nearly proximates the natural condition. That is why they are pleased with it. Dr. Roach does these things in the way he has indicated here.

One thing more I want to endorse is the split root technic. That is to my mind the most valuable thing he gave us tonight. It is the only positive technic that I know of. I thank you.

DR. LESTER BRYANT:

I do not think there is anything left for me to say but the benediction. I had a lot of things to say, and if I were to speak of all of them I would keep you here all night.

Dr. Roach spoke of shell crowns and the places for infection in our bridge work. Dr. Hunter was not far wrong in some respects when he spoke of the poor dental work that is done. He had reference, of course, to all kinds of dentistry. The average shell crown that we see in the office is the limit, and any man who wears it ought to have a monument. The reason the shell crown fails is because the enamel has not been removed. If every particle of

enamel was taken off the crown would come nearer fitting. Not only that, but the contour is bad.

I can hardly agree with Dr. Roach with reference to saddles for fixed bridges, but it is too late to go into that phase of the subject. Besides, Dr. MacBoyle covered it thoroughly, as did Dr. Dittmar. I thank you.

DR. ROACH (closing the discussion):

I realize I bit off too big a bite in this talk, so that it has not left very much room and time for those who were to follow me to say much in the discussion. I expected that the audience would interpret these pictures with what few remarks I had to say about them, and I did not go into detail as much as I should in some particulars. I merely want to refer very briefly to one or two objections. I admire very much a man with the courage of his convictions, and I admire Dr. MacBoyle for taking the stand he did with reference to the saddle. I took the same identical attitude he did a good many years ago before I had the experience with the saddle I have had. I was very anxious that Dr. Goslee be here tonight to have his expression on this question of the saddle. I called him up today to find out if he were coming here because I knew his attitude in regard to it. He has had a very extensive experience in the construction of bridges with the individual saddle. I am glad Dr. MacBoyle has uttered a word of caution in regard to the indiscriminate use of the saddle, for that is by all means to be discouraged. It wants to be used cautiously and under its indications, but when intelligently applied I believe it is the most sanitary bridge which we can make in the way of a fixed bridge. For years I have bitterly opposed the fixed bridge from a sanitary point of view in every type, but we are compelled in a great majority of cases to put in fixed bridges, but when we have to do so we must do the best we can with reference to the various requirements that Dr. Dittmar has referred to so nicely. But with reference to the saddle, when I spoke to Dr. Goslee today and asked him if I could quote him as favoring the saddle, and that if he did favor these individual saddles, what he would say in opposition to the use of them, he replied, "Roach, the man who opposes the individual saddle is the man who has not had a very extensive experience with it." I believe that is true. I quote that from Dr. Goslee because I know of his experience. He is using these saddles in connection with his tooth which, in con-

nection with the casting process, is a very great addition to our bridge construction. I want to take this opportunity of paying my compliments to Dr. Goslee for giving us this tooth which has been a great addition to our bridge work from a cosmetic effect, and the possibility of restoring these cases with the maximum cosmetic feature in connection with it.

Dr. MacBoyle criticised the fixed saddle on the ground that he had never seen one under which there was not either a congested inflamed or unhealthy condition. At the same time, he has admitted that he removed today a bridge of the old type around which there was considerable hypertrophy and a diseased condition. All of you have seen a great many cases in which there was a diseased or unhealthy condition, or unsanitary condition, existing on account of the old so-called self-cleansing form of construction. These are matters for each of us to work out individually and to handle them as intelligently as we can in our own practice. The question resolves itself to the kind of technic and practice that best suits one's own individual judgment and ability, so that I merely say this much in regard to the saddle again. Use it carefully. Do not go into it in a slipshod way and use it indiscriminately, but try and get a proper knowledge of the cases in which these saddles are to be used and use them intelligently, and I assure you honestly and with all earnestness you will not be disappointed if you use them in that way.

I want to thank Dr. MacBoyle and Dr. Dittmar for the kindly way they handled me, because I expected they would take my scalp with regard to this particular feature. I am glad indeed Dr. MacBoyle said what he did because I think it will probably make those of you who undertake this form of construction more conservative and careful.

REMARKS ON REORGANIZATION OF NATIONAL DENTAL ASSOCIATION.*

BY DR. ARTHUR D. BLACK, CHICAGO.

Mr. President and members of the society: Many of you will remember that at the meeting of this society held a year ago, there was presented a statement from the National Dental Association,

*Read before the Illinois State Dental Society.

together with a request that this society take a certain action looking toward affiliation with the National in connection with its reorganization. This society could not see its way clear to accept the proposition of the National Dental Association, and therefore passed a resolution inviting representatives of other reorganized states to meet with representatives of our society and discuss the situation in the hope that we might evolve a plan which would be acceptable both to the reorganized societies and to the National Dental Association.

I am not going to take the time here now to recite to you much of the detail of the work of this committee, composed of Dr. Converse, Dr. Dittmar and myself, further than to say that a meeting of representatives of a number of reorganized states was held in Chicago on July 20th last year, and a whole day was occupied in the formulation of a plan to be presented as suggestions to the National Dental Association.

There were present at this meeting in Chicago representatives from the state societies of Ohio, Michigan, Minnesota, Iowa, Missouri, Kansas, Oklahoma and Illinois, and these representatives drew up a list of suggestions which were unanimously adopted.

At the meeting of the National Dental Association, held in Washington, a new constitution was adopted which embodied the more important suggestions which this committee sent them, and it was supposed at the time that the main work in the development in the plan of reorganization of the National Dental Association had been completed. Following the meeting of the National Dental Association in Washington the Executive Council of this society held a meeting in Chicago on the 28th of September, and drew up a plan for this state by which the matter would be presented to the various local societies of the state, and then here in this society, and thereby fully affiliate with the National Dental Association with all of our members, complying to the letter with the provisions of the constitution as passed in Washington.

It may not be out of place for me to go back for a moment to call your attention to the fact that there has been, as mentioned in the President's address this morning, more or less constant agitation over reorganization of the National Dental Association ever since the Illinois Dental Society was reorganized in 1904, and also that the progress which the National Dental Association has made has been extremely slow. This society sent resolutions to the Na-

tional Association when it met at Minneapolis, in 1907, requesting them to take up the work of reorganization. Those resolutions were never allowed to be presented on the floor of the National Dental Association. There has been almost a mysterious and incomprehensible attitude on the part of men who are directly connected with the management of the affairs of the National Association towards reorganization, which no one seems to fully understand. I have mentioned this little bit of history to assist in explaining the things that have happened since the National Association passed its constitution in Washington last September. As most of you know, there was presented by some one, representing the Council of this Society, a statement before each of our component societies, requesting component societies to vote on the proposition and to send in 50 cents additional dues per member, and the Executive Council of the State promised to present at this meeting a resolution providing that the State Society should pay the other 50 cents and in that way pay the dues of all our members in the National Dental Association for this year. This was done at the local meetings of the societies throughout the state, and the extra 50 cents in dues have been paid in from the locals by about 1500 of our members. The State of Illinois has complied with the constitution of the National, and this society stands ready now, I believe, to place its full membership in the National and back any movement which will tend to give us a broader and better National Association. We have been criticised for the action we have taken in this and so have some of the other reorganized states; the statement being made that the western states were attempting to get control of the National Association. We have always replied what we believed to be true that this society is only interested in the reorganization of the National to the extent that it shall be reorganized on broad lines which will make the future control of that organization by any one set of men or one group of states an impossibility, and that is what the representatives have stood for and what all reorganized societies stand for in connection with the National Association.

Missouri, Iowa, and many other states have done what we have in this state since last September, during that time we made reports to the officers of the National as to the progress we were making. We sent them last October statements of what we

proposed to do and kept them advised as to the number of our local societies that had passed on this proposition. We did not learn until the last week in January that the officers of the National Association had taken the position that the new constitution which was adopted at Washington was not to go into effect until after the meeting at Kansas City in July this year, although there is nothing in the parliamentary procedure which would support such a contention. In other words, if the decision or statement of the officers of the association is true, then the dues for the National Association this year would be \$5.00, and our members could not join the National this year upon the payment of \$1.00 dues. We are therefore placed in the position where we do not know whether we can be members of the National Association this year or not. It would naturally be supposed that when such states as Missouri, Iowa and Illinois had taken so much interest to further this movement of the National and had been sufficiently active to arrange to join with our full memberships, that the officers of the National would be pleased. On the other hand, we have met with opposition to our joining it at every step we have made throughout the entire year. The committee feels it is only fair to the society to state that we have had to fight every inch of the way we have gone in this action. We gave it as our opinion to the officers of the National Association last July that these reorganized states would throw 5,000 members to the National Association this year if they adopted the suggestions we sent them, and as early as the first of January we had that number of members in sight. When we consider the fact that the National Association has never had as many as 800 members, it looks as though they ought to be glad of the prospect that is before them. The situation stands today something like this: that the National Association at its meeting in Washington adopted a new constitution without any provision whatever being passed at the time as to when it was to go into effect. No resolution was passed at the meeting stating any future time when it would go into effect, and it would seem reasonable to suppose that it went into effect when it was passed. The constitution provided for the organization of a House of Delegates composed of the delegates of the various states for the 1913 meeting at Kansas City. The contention of the officers is inexcusable and is, in our opinion, part of a definite plan to delay the reorganization of that body. I do not think we ought to occupy

very much of the time of this association with the details of the situation. I may sum it up by saying that last year, when the Illinois Society passed resolutions looking towards the development of a better plan of reorganization for the National Association, the National Association accused this society of attempting to delay the reorganization movement. Since that time the same reorganization committee have fought every move which the reorganized societies have made, that looked towards the rapid development of the reorganization movement. As evidence of the true situation, I will say this: most of the reorganized states are ready this year to put all or most of their membership into that association. On the other hand, the officers of the National Association have made no move whatever, they have sent no communication whatever, so far as I know, to the representatives or officers of other state societies, urging them to join the National Association. The whole situation is peculiar, and it would look as though these state societies will yet have to fight out the way towards complete reorganization of the National body.

The committee representing the reorganized states have made recommendations to these states as to what they should do in view of the present situation. Those recommendations, summed up briefly, are as follows: all the societies which are now ready to join the National Association should do so, and should vote money covering dues to their members and elect delegates to go to Kansas City and represent them, and should in every way comply with the constitution as passed at Washington, with the exception that the society should give the delegates so elected full power to act for it when they get to Kansas City. The points in controversy cannot be settled until the National Association meets. We should vote to affiliate with the National body. We should elect delegates and place the amount of our dues in the hands of the delegation and give them power to act when they get there. If, when they get there, the new constitution goes into effect, Illinois will stand with the other states to do its part to vote for affiliation. If they find that cannot be done when they get there, they may withhold the dues of the society and not affiliate this year, or do whatever seems best under the circumstances.

I have given you a brief statement of the situation, and I will only add to it that there have been held during the year a number

of conferences in Chicago and elsewhere in regard to this movement. This committee has carried on a good deal of correspondence with officers and committees of the National and the reorganized states. The committee has not acted on its own initiative to any great extent. When the action of this society was challenged last year, we immediately called in some twenty odd members of the society to a meeting and asked them whether or not we were properly interpreting the instructions of the Society. They took the position that we were, so that we feel that the action of this Society and that of our local societies, tend to place the Illinois State Dental Society in a splendid position in relation to this whole movement. I should like to go to Kansas City with the feeling that we have done our full duty in connection with the work, and we are still prepared to do our full duty in furthering it. The Council in discussing this matter this morning decided that a statement of the situation should be made before this body now, but that a vote should not be taken now, in order that the members might have some little time to discuss the matter and to ask questions, in order that we may have a clear understanding before we take a vote, and the president will announce the time when a vote will be taken.

DEATH OF DR. GEO. C. MATHISON.

Just as we go to press word comes of the death of Dr. Mathison, of Winnipeg, Manitoba, one of the brightest lights in the profession of Canada. Dr. Mathison died after a brief illness from some affection of the brain, leaving a void in the professional ranks of his native country which can never quite be filled. He was one of the most charming, versatile, loyal, and lovable men in dentistry, a power for good in the councils of his profession, and a friend of every man in it. Yesterday the world was brighter because George Mathison lived in it—today it is darker because he has gone out of it. He did great good while here but he did not remain long enough with us.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

PYORRHEA ALVEOLARIS AND THE VACCINES.

The following editorial in the *New York Medical Journal* for January 11, 1913, merits the careful reading of every dentist:

The disease to which the symptomatic name of pyorrhea alveolaris has long been given forms the subject of a valuable contribution to the *Boston Medical and Surgical Journal* for December 19 and 26, 1912, from the pen of Dr. Leon S. Medalia. The value of the paper lies in the advice as to treatment of this resistant affection which the writer prefers to call chronic alveolar osteomyelitis, advice which seems likely for the first time to lead to definite and permanent remedial results. Dr. Medalia has treated 115 cases in all stages with a percentage of cures in the incipient stage of ninety-two per cent, in the moderately advanced stage of ninety-three per cent, in the far advanced stage of forty-three per cent. These results are of particular interest to our readers, not only on account of our repeated emphasis on the importance of the condition as a symptom of certain constitutional dyscrasæ, but because the curative results were obtained by the use of vaccines, to which we have recently devoted a large amount of space. The coincidence is interesting, in view of the impartial discussion we have presented as to the relative merits of the stock heterogenous vaccines and the clinical autogenous, that the Boston writer uses as a mixture of the two.

Local measures formed an important part of this new treatment, but these were along the old lines and have never by themselves produced results at all encouraging; they were carried out by the various dentists who sent the patients to Dr. Medalia and in many cases sent with them the statement that used alone they would be hopeless. We believe that no more striking testimony of the value of vaccine therapy could be adduced than the encouraging outcome in these cases of a disease which has hitherto resisted absolutely the most painstaking and ingenious oral surgery.

Among the author's conclusions are that the tooth sockets are enlarged medullary spaces, while the so-called periodontal membrane is in reality a ligament which holds the tooth suspended in the alveolar cavity; mechanical causes are responsible for starting chronic alveolar osteomyelitis, while the pyogenic bacteria, particularly the pneumococcus in chains, are responsible for keeping it up; again, and this is where our repeated opinion is corroborated, a great many rheumatic diseases, so-called, are directly related to the osteomyelitis, and vaccine treatment, together with the proper dietary regimen, cures or relieves the systemic disease as well as the local trouble.

The neglect of this foul and obvious condition has long been a reproach

to diagnosticians. Here the dental surgeon's work can take its proper place in relation to the physician's as an inseparable section of general medicine, working toward a result of the highest importance to the health and satisfaction of the victim. The physician will no longer carelessly waive the patient over to the dentist, to the latter's despair, but labor with him to the great comfort of the individual and the protection of the community against one of the most contagious and obstinate of pathological conditions.

No matter what a man's preconceived notions may be regarding the local or constitutional origin of pyorrhea alveolaris, there is one thing which stands out conspicuously to every observant practitioner, and that is, that systemic conditions affect most profoundly the progress of this disease. That the local irritation of deposits is a prominent factor in many forms or stages of this affection is abundantly evident from the fact that their thorough removal relieves the trouble, and that local treatment alone controls satisfactorily these particular cases. But there are other cases where no kind of local treatment will affect a cure and where the evidence of systemic influence is too emphatic to be ignored. In the light of our present limitations in the management of this disease we need all the aid we can get in seeking a cure, and if the vaccines promise relief they are at least worthy of an intelligent trial.

A very hopeful aspect of the foregoing editorial is the attitude of the author toward coöperation between medical men and dentists in the control of this disease, and if the thinking men of both callings unite there can be no question of the benefit to the people who are suffering from this affection. But the thing which after all impresses one as most significant is the crying need for original research to throw light on the etiology of the disease—without which all our attempts at cure must remain for the most part empirical and uncertain.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS.

ANOTHER VACATION STORY.

(Continued from the June Issue.)

THE CONGRESS.

To go into all of the various functions professional and social of the Congress week at Brisbane would be impossible. Such entertainment I never witnessed, and if the *Queenslander* had a reputation for hospitality before, he surely enhanced it on this occasion.

Interspersed with the scientific part of the program were the various social functions consisting, first, of a dainty little luncheon by President and Mrs. White on Monday, followed that evening by a monster reception to the members and their ladies by the Odontological Society of Queensland. On Wednesday afternoon Dr. and Mrs. White entertained the Congress with an "At Home" on the government steamer "Lucinda," down the Brisbane River. Then, on Thursday afternoon, a reception was given at Government House by His Excellency Sir William and Lady MacGregor. Government House is a beautiful spot some little distance from the center of the city, and the afternoon was most delightful. It was supposed to be mid-winter in Australia but Queensland is so situated that their winter is only a counterfeit presentment, and that afternoon at Government House the tables were artistically arranged on the lawn. Sir William and Lady MacGregor were most gracious hosts and the afternoon was spent in a delightful way. On Friday night the Congress banquet was held and to wind up with on Saturday a trip was taken to Nambour, about sixty-five miles from Brisbane up among the pine-apple and sugar plantations. In addition to all of this there were functions every day for the ladies, and I had hard work keeping a line on my three girls that week.

The chairman of the committee having the entertainment of the visiting ladies in charge was Mrs. E. T. White, wife of the President of the Congress, and never was there a more charming hostess. Considerate, gracious, alert and always active she was devotion itself to the comfort and happiness of her guests. Assisting her in many ways and most efficiently were Mrs. and Miss Burne of Sydney, Mrs. Eden, wife of D. R. Eden, a long-time practitioner of Brisbane, Mrs. McNaught and Mrs. England of Brisbane, and many other gracious ladies whom the present inefficient society editor fails to recall. The thoughtfulness of these women, particularly for the pilgrims from over seas, whom they had never met before, was truly delightful. Mrs. Eden was one of the most hearty, whole-souled and jolly women who ever graced a function. She made you feel as if you had known her half a—I was going to say half a century, but no one would ever imagine Mrs. Eden half a century old. Mrs. White, Mrs. Burne and Mrs. Eden have promised to come to America some day and bring their husbands along. Wait till that day comes, and there will be some happy

people in the city of Chicago with arms extended wide to welcome them.

The trip on the "Lucinda" Wednesday was most enjoyable. The banks of the Brisbane River are beautiful and the party was very gay. Some of the men got me down in the dining cabin of the boat and made speeches at me and I made speeches back. I was either speaking or eating most of the time in Australia. Looking out on the bank of the river in one place a gentleman remarked to me that they were breaking ground for a new meat factory. "I believe it is some American firm," he said. I asked the name. "Let me see," he remarked, "seems to me it is something like Armour." "Armour!" I exclaimed and ran for my kodak. The snap-shot did not turn out well else I should have had it framed and sent to Mr. Armour on my return to Chicago.

The quartermaster of the "Lucinda" seemed to take an especial interest in my Indian Girl and the Collector and never lost an opportunity of showing the points of historic significance. He took them to the cabin on the boat where the articles of Australian confederation were signed. The Collector, who is quite historic in her tastes, was immensely impressed with this little room. "There's a dredge," he said, pointing across the river, "which they brought over from America, but it was a failure—wouldn't work." Quick as a flash that Indian Girl of mine replied: "That was merely because they didn't know how to manipulate it. Those dredges work *perfectly* at home." That is the American girl for you. But it seemed to please the quartermaster, though at first his eyes enlarged a bit.

Another pleasant diversion from the strenuous scientific program of the week was enjoyed Friday afternoon when Mr. T. D. England of Brisbane and Dr. White took Dr. Burne, Dr. Magnus and myself for an automobile ride up to "One-Tree-Hill," otherwise called Mount Coot-tha. It gave us a commanding view of the entire country and on the way back we made calls at the delightful homes of our hosts. We made the trip in an American car, which naturally made me feel more at home.

I was given a card to the Johnsonian Club of Brisbane, an old club with quite a history, and entertained at luncheon by Mr. H. S. Moran, President of the Odontological Society of Queensland at the Queensland Club.

At the banquet Friday night there was more enthusiasm than

the room could contain so it burst out the doors and windows and made the air reverberate outside. Toasts were proposed, supported and responded to till everybody had been properly pledged, and not content with that the committee had me down for two toasts. The hall was again draped with the Union Jack and the Stars and Stripes, which moved me to recite the following poem which I had written on the boat going over:

TWO FLAGS.

Two flags have waved before the breeze,
The one a thousand years;
The other not so long by far,
Yet proud its banner rears.

The one encircles all the earth,
From Banff to New South Wales,
From snowy swirl of crag and glen,
To India's tropic vales.

The other floats o'er freedom's home,
The land with open arms,
With bands of steel across her plains,
With marts of trade and farms.

And both wave over mighty men
Who boast a common stock,
The Anglo-Saxon and the Celt,
With principles of rock.

And both shall wave so long as men
Need men to hold the peace,
The Union Jack and Stars and Stripes
Proclaim that war must cease.

The Stars and Stripes and Union Jack
Mean brotherhood for man,
The blessings of a-common weal—
The universal plan.

The Union Jack and Stars and Stripes
Extended side by side,
Displace the germs of bitterness,
Of rancor and of pride.

Long may these flags float side by side
To keep oppression back,
Long wave Old Glory, Stars and Stripes,
Long wave the Union Jack.

At the banquet several presentations were made. Dr. White, the President of the Congress, Dr. Canton, the distinguished representative from Great Britain, the two Hon. Secretaries, Drs. Gibson and Walker, all were remembered by beautiful souvenirs of the occasion, amid great applause. I had another lump put in my throat by receiving an artistically engraved case containing six souvenir spoons with Australian emblems on them, such as the native flower—the wattle, the native bear, the emu, the kangaroo, the Aboriginal, and that peculiar bird, the kookooburra or laughing jackass. In the top of the case was a silver boomerang. Truly, I shall prize that present always and forever.

The grand climax of entertainment came Saturday when we took the train for Nambour, a station on the North Coast Line, and spent the entire day in a unique picnic. Arriving at Nambour station we were met by one of the town officials and bade welcome, and then came a ride the like of which none of us had ever experienced. A sugar plantation train consisting of a little engine and flat cars without buffers or springs on a tiny track two feet wide stood waiting to convey us through sugar-cane fields to the Maroochy River, about eight miles distant. It was a wonderful trip through all kinds of tropical vegetation such as we had never seen, and as we landed at the river bank we all voted it a glorious experience. At the river sixteen motor boats were waiting for us and we had a splendid run about two miles down the river to a beautiful spot which had been selected for our luncheon. And such a feast as we had—how they ever managed those things is beyond my comprehension yet. After luncheon we all embarked again and were taken up the river about ten miles to another landing where we were met by the cane train to take us back to Nambour by an-

other route. The Mater and I were honored by a place in the commodore's boat, the "Miranda," owned and run by a charming gentleman, Mr. E. R. P. Wainwright, the resident dentist of Nambour. Much of the success of the entire day was due to his foresight, his unceasing energy and consideration. Those people of Queensland seemed never so happy as when contributing to the enjoyment of others. At this landing we received something of a fright owing to the delay of two of the boats which contained thirty-seven members of the party. I venture to quote an account of this part of



The picnic of Congress members July, 1912, by the Maroochy River. Photographed by Charles Hall.

the trip from an article by Mr. Charles Hall (a gentleman, by the way, whose company I enjoyed most thoroughly on account of his wide familiarity with Australian affairs and his great patience in explaining them) published in the *Commonwealth Dental Review* of Sydney:

"Darkness came in due course, and with the exception of an oil flare on the locomotive, there was no light. The company were in good spirits; but as the time sped on, some alarm was felt for the safety of the non-arrivals, and, as the time of the evening meal passed, other pangs were experienced, a number of the more ravenous feeding upon sugar cane which grew close at hand. It was at this juncture that the influence of the fair sex asserted itself in a

charming manner. Mrs. and the Misses Johnson—the wife and daughters of Dr. C. N. Johnson, of Chicago—sang together some pretty melodies, strange to most of us, but very sweet. On the still night air the rhythmic cadence rose and fell in soft and soothing tones, and was continued until the arrival of the belated ones. Never has the writer found music so sweet and so effective in an anxious time. The music ceased, for the strain had passed with the knowledge that all were safe, and the long train of cane trucks, heavily freighted with its human burden, carefully moved through the dark to its destination. Every now and again the sugar cane and



Maroochy River, Queensland.

other plants growing beside the track would brush against us and occasionally the gleam of water would mark our passage across some stream; except for this, all was blank until after some eight miles, the lights of Nambour came into view. To the engineer who so successfully brought all back to Nambour in safety, too much praise cannot be given; to him we owe perhaps more than was thought at the time, for it was an unusual experience. Brisbane was reached at 11:15 p. m., and, as some were bound to return south by the early morning train, no time was lost in packing. All's well that ends well."

I cannot permit myself to leave Brisbane or Queensland without giving a few of the impressions I had while there. No man has

the right to rush headlong through a country and make sage remarks about it based on a superficial observation, yet some things seem so significant on their face that one may be permitted to mention them. Foremost, of course, is the hospitality of the people. Nothing in all this impressive country strikes one so forcibly as this. We left Brisbane early Sunday morning, and at Ipswich, about twenty miles away, we found at the station some of our friends who lived there and who had risen early to come down to the



Pineapples growing in Queensland.

train and bid us Godspeed. As the train pulled out they handed in a large basket of fruit to cheer us on our way. Ever thoughtful, ever self-sacrificing, and feeding us to the last.

Queensland is the great north-eastern state of Australia and is enormous in territory, having a coast line of more than 2,000 miles. It is five and a-half times larger than Great Britain and Ireland, more than three times the size of France, and the combined empires of Germany and Austro-Hungary could be dropped into Queensland and leave a margin. It extends about 1,200 miles from North to South and at its widest part East and West it is more than 1,000 miles. In this vast territory there are only about 600,000 whites and less than 9,000 aborigines, which makes not quite one

person to every square mile. Staggering, is it not?—when one thinks of the congestion of population in some parts of Europe and Asia.

It grows within its borders nearly everything imaginable and could support at least fifty times the number of people who are there. The Darling Downs between Brisbane and the New South



Mango Tree, near Brisbane, Queensland.

Wales border are as fertile as any land I have ever seen, a rich black soil, apparently inexhaustible. Farther north all kinds of tropical fruits and plants flourish.

Brisbane is the capital city with a population of about 150,000. It has three striking peculiarities which impress the visitor most forcibly—the splendid character of the people, to which I have already alluded; the fact that the houses are all built on piles, and stand up from the ground; and third the most inconceivable and unthinkable thing I have ever seen in our modern civilization, viz.: that in a city of that size they have no sewerage system. Imagine that if you can! Some day, unless this matter is remedied, there will be an epidemic which will appall the world, and it would be a



Papaw in fruit. Queensland.

thousand pities if this should happen because the world can illy afford to lose any such people as there are in Brisbane. The philosophy of building the houses on piles is explained by the fact that there is

an insistent little creature in Queensland called the white ant which has to be reckoned with when it comes to a human habitation. This ant, only a few millimeters in length, will burrow into a residence and utterly ruin it if not kept out. The houses are thus stood up on piles and a metal cap placed over each pile to keep the ants out. Speaking of ants reminds me that I saw some of the largest ant hills on the way between Sydney and Brisbane that I have ever witnessed. I saw these great reddish-brown mounds and could not imagine at first what they meant until I was informed that they were ant hills and sometimes reached the great height of ten or twelve feet. Australia is a country of immensities and I do not suppose they could have a small ant hill if they tried.

In Brisbane I met some very interesting newspaper men and was royally entertained by them. I took a letter of introduction to Mr. J. R. H. Lewis of *The Telegraph*, one of the leading dailies of Queensland, and he showed me many courtesies. I found Mr. George Woolnough, the editor-in-chief, one of the most striking and interesting men I had met in Australia, a newspaper veteran of many years' service and thoroughly impressed with the future possibilities of Queensland. He presented me with a copy of his book, "Kosmos," to read on board ship going home and afterward wrote me a delightful letter to Sydney before I sailed, wishing me a safe journey to America. Mr. Lewis also remembered me in this delightful fashion, and I came to the conclusion that the Brisbane people were possessed of a sentiment more than skin deep because they did not forget a man as soon as his back was turned. Mr. H. G. Shaw, the associate editor of *The Telegraph*, I found to be the "livest wire" I struck when it came to a keen knowledge of the political outlook in Australia and I had several most interesting interviews with him, the gist of which I would repeat if I had space. I must also mention Mr. F. J. Brewer, who reported the Congress for *The Telegraph*, a man of conscientious application to his duties and the most faithful in his presentation of facts. In this connection let me remark incidentally that the press of Brisbane are without exception to be highly commended for the accuracy of their Congress reports. They gave pages in the aggregate to the meeting and I have never read more accurate or comprehensive reports. Best of all, they were conspicuously free from that abominable form of buffoonery with which so many newspaper reports of such meetings

are dished up to their readers. They were dignified, readable and instructive.

My experience with newspaper men on this trip was most pleasant. I was interviewed all along the line, from Auckland, Sydney, Brisbane, Melbourne, and on to Wellington, and San Francisco, and was reported in every instance most accurately. In fact it has been my experience that the bug-bear of misrepresentation by newspaper men has been greatly overestimated. If you treat the newspaper boys in a perfectly frank fashion and meet them like men they will usually treat you in the same way. It is true that several papers in Australia published interviews with me when I had never seen nor talked with their representatives, but there was an evident aim to express my ideas accurately as gleaned from other sources, and no attempt to do anyone harm. The sole criticism I have to make of the Australian and New Zealand papers is that they wasted altogether too much space on a poor pilgrim from America who could not by any possible chance lend much prestige to their publications.

C. N. J.

(To be continued.)

BOOK REVIEWS.

PRACTICAL MANUAL OF DENTAL CASTING. Being the recorded experiences of many able and eminent men in the dental profession. Profusely illustrated. Reprinted from *The Dental Summary* 1909-1913. 233 pages. Published by The Ransom and Randolph Co., Toledo, Ohio.

This volume is made up, for the most part, as intimated on the title page, from papers which have appeared in *The Dental Summary*, and it must be read with that idea in mind rather than as a consecutive treatment of the technique of casting. The book contains much valuable material and will well repay a careful reading by every practitioner interested in casting.

INTERSTITIAL GINGIVITIS AND PYORRHEA ALVEOLARIS, by Eugene S. Talbot, M. S., D. D. S., M. D., LL. D. Cloth, 333 pages, with 101 illustrations. Published by Ransom & Randolph.

In 1899 Talbot gave the profession a book under the same caption as the above. The 1913 edition, though more comprehen-

sive than the earlier edition, contains much of the matter found in the first book, though it is not issued as a second edition.

As in the first publication, the author sharply differentiates certain diseases of the gum, peridental membrane and other adjacent tissues, from those pathological conditions in which there is a positive flow of pus, such as pyorrhea alveolaris. In this he is certainly justified. The term pyorrhea alveolaris is too often loosely used.

The book emphasizes the transitory nature of the alveolar process and denotes it the only bone end organ of the body, and seems to prove his contention. He also states that the dental pulp is the most complete end organ in the body. These tissues being end organs have less recuperative power, and therefore are the least amenable to treatment after once becoming diseased.

The uric acid theory as a causative factor in diseases of the gums, alveolar process and peridental membrane is it seems, fully disproved by the experiments of the author. The conclusions of the writer agree with those arrived at in general medicine as to uric acid being a causitive factor in the production of certain diseases.

Dr. Talbot believes heredity plays no part as a causative factor in interstitial gingivitis and pyorrhea alveolaris, other than by lessening the power of resistance. He believes that interstitial gingivitis is the primary disease and that pyorrhea alveolaris is merely a sequence, the flow of pus being a secondary manifestation. In accordance with this belief, there can be no specific bacteria as a primary cause of interstitial gingivitis or pyorrhea alveolaris. The argument brought to bear on this phase of the subject is strong, however there are those who will not, as yet, be convinced of the truth of his conclusions. He would account for the prevalence of the disease in two or more members of the same family by the similarity of habits of those closely associated.

The author is quite within the truth in his statement that traumatism of the tissues closely associated with the teeth, are the principal initial cause of the diseases under consideration. As he states, rubber dam ligatures and clamps, wedges for separating teeth, badly adjusted crowns and bridges, etc., are constant etiological factors. He might have added that too much zeal in polishing and scraping healthy teeth at and below the gum margins, to pre-

vent decay, and gingival diseases, may, from injuries done these tissues, prove a growing cause of interstitial gingivitis and pyorrhea alveolaris.

The writer has done a great amount of original work and collected data from almost every conceivable source bearing on the subject. Every dentist, should not only read this book, but study it carefully, as it is worthy his consideration. Especially is it recommended to those who are making a specialty of diseases of the gums and contiguous tissues. All such should know everything that is known about these tissues, both in their normal and diseased conditions, that they may in reality be specialists in the true sense of the word, and not mechanics, working without specific knowledge of the tissues operated upon.

The illustrations, type and paper used in the making of the book are excellent.

T. L. G.

CORRESPONDENCE.

To the Editor of THE DENTAL REVIEW:

Sir—There is a small persistent error in the accepted descriptions of Normal Occlusion, and the present would appear to be an opportune moment for drawing your readers' attention to it, in view of the important paper by Dr. C. N. Johnson, entitled, "Once More the Contact Point," in your issue for April last.

In text-book descriptions it is stated that the lingual cusp of the upper first bicuspid occludes in the sulcus between the two lower bicuspids. Such a relationship is rarely to be found in the best examples of normal occlusion found in living mouths, in skulls, or in plaster casts. I took as examples of normal occlusion those that in the general arrangement of sound well-formed teeth were the nearest approximation to the "perfect" denture observed during a search for it extending over many years.

The normal arrangement of the premolars in occlusion was found to be such "that the point of the lingual cusp of each upper premolar occluded, not in the sulcus *between* opposing teeth, but in or at the distal pit or triangular groove *on* the corresponding lower premolar." This fact was noted in a paper published in the *Dental Record*, Sept., 1912, entitled, "The Premolars: a Note on Occlusion and Mastication." Since then the relationship noted

has been verified independently by several observers of repute, and it would be interesting to learn the results of a re-examination by American observers. The paper was mentioned in the London *Lancet* in the annual summary of dental work published during 1912; it escaped notice in the American dental journals.

The general proposition for correction of the text-book descriptions of normal occlusion was supported by fresh evidence from the morphology of the teeth, and a normal "*shewing*" of the occlusal surface—particularly of first premolars—was described and illustrated. The mechanical efficiency and the conditions as related to dental sanity were shown to be inferior in the occlusional relationship hitherto accepted as normal, as compared with the tooth form and relationship observed by the author. The alleged wedging occlusion of the lingual cusps of upper bicuspsids is not a normal relationship in the teeth of present-day civilized man.

As regards the lower premolars, the buccal cusps may indeed "occlude" between respective upper teeth; but it will, I think, be found that the obtuse points of those cusps, the extreme shallowness of the upper inter-tooth "sulcus" whereat they occlude, and the niceties of the food-deflecting and gum-shedding morphological details, are all normally adapted to prevent any inimical wedging action, or render it insignificant. I am, sir,

Yours faithfully,

D. M. SHAW.

Royal Dental Hospital, London, May 14, 1913.

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

The Reproduction of Wax Model:—When a quick setting investment compound is used gradually sprinkle compound over surface of water, allow to sink without stirring. Now, with camel's hair brush paint model carefully. Then add enough investment and stir with spatula to get the mass thick enough to just pour. By

painting model before stirring the mass will not set until poured.—*C. A. Halle, D. D. S., Chicago, Ill.*

Porcelain Technique:—Building up the porcelain bodies for inlays in the mouth has a great many advantages providing the field of operation can be kept free from saliva. The porcelain can be packed into the matrix and the colors placed to follow the color scheme of the teeth we are repairing. This holds true in jacket crown as well as inlay work, as in these cases the scheme of colors in proximating teeth can be used as a guide in selecting and placing of shades.

Failures in Casting:—Many failures in casting may be traceable to the use of too large a sprue former. This permits the gold when in a highly molten state to descend a short distance in the large sprue hole and there to become lowered in temperature, thus forming in some cases an obstruction which blocks the passage from the crucible to the mold. So in all ordinary casting it is preferable to use a relatively small sprue former and one that is cylindrical rather than conical in form.—*R. I. Wood, D. D. S., Chicago.*

Inlay Investment:—A mixture of silex 3 parts and dental plaster 1 part, by weight, makes an excellent and inexpensive investment compound for cast work. Mix to a creamy consistency, eliminating air bubbles by jarring plaster bowl on bench while stirring. (Never jar ring while pouring up.) When wax has burned out allow investment to cool down before casting, irrespective of casting method employed. This investment will not crack if properly mixed, and the castings will come out with a smooth, brilliant surface.—*P. G. Puterbaugh, D. D. S.*

To Get the Wax Inlay Out of the Investment:—If it was out of the investment clean, and the investment and matrix unharmed, you would be glad, would you not? Well, after the investment is hard, remove the sprue former, set the flask into boiling water. Boil it good five minutes, when no wax appears at the sprue hole it is "done." Now dry out over a low fire, don't let the blaze touch the investment. Keep blow pipe or any high heat off. It will dry in

20 to 30 minutes. When stone cold cast and look for the best ones you ever made.—*E. J. Perry, Washington, Iowa.*

Taking Plaster Impressions:—In taking an upper impression patient should sit erect; tray inserted, pressed firmly to place and held with one finger on center of palate; then incline patient very much forward to the point of gravitation. This position you will find very beneficial in relaxing muscles and preventing nausea. Do not remove until chemical action has made the tray very warm. A good story will help to pass the time, and if you gauge it correctly, the climax will come just at the right time and you will find the hearty laugh will assist in removing the tray more easily than a forced cough.—*Irwin B. Carolus, D. D. S., Sterling, Ill.*

Porcelain Technique:—In the majority of anterior human teeth the incisal edge has a bluish line due to the thinness and transparency of the enamel. In order to secure the most artistic results in porcelain crown work this condition must be reproduced where there are similar conditions in the same mouth. In porcelain jacket crowns this can be produced by constructing the incisal of bluish porcelain. In facings which are cemented to place with a gold backing fuse on the back near incisal a little black stain. In crowns such as Davis, T. C., etc., grind the incisal and replace with blue porcelain.—*Elmer S. Best, D. D. S., Minneapolis, Minn.*

A Common Mistake of the Dentist:—One reason the dentist does not find evil results from jaw infection outside the mouth is because he does not look for them. If alveolar abscess is found or pyorrhea exists, the dentist should inquire into the physical condition of his patient. If he does this he may find that some of his patients have an arthritis or other disability. If chronic alveolar abscess and pyorrhea cannot be cured by antiseptic or surgical means, then the teeth involved should at once be removed, as it is far better to sacrifice one tooth, or all of the teeth indeed, than to chance serious involvement of vital organs.—*T. L. Gilmer, M. D., D. D. S.*

A Temporary Crown:—Fit a suitable two-pin vulcanite porcelain tooth to your root and then fit into the root canal a piece of lead solder wire of 14 or 16-gauge. The wire should be extended

just above the pins of the tooth. The end of the wire should be slightly flattened. The lead being soft the pins of the tooth can be pressed into the wire. Set the crown temporarily with gutta-percha. If constructing more than one tooth the lead wires should be placed in all of the root canals first, then joined with a separate wire, by using a warm iron these can be soldered together. The pins being pressed on, this wire will bend at short lengths, and still hold its position.—*Geo. A. Randolph, D. D. S., Chicago.*

Common Difficulties with Patients:—If the patient has worn a plate before, even though the bite needs lengthening and the features need to be restored, and you have done so, they see the difference and because it is something to which they are not accustomed they do not like it. In nearly every case where patients have worn plates for a number of years I find upon using large posterior teeth that they bite their tongue, which is natural until they become accustomed to a more limited space. Very few patients, even over fifty years of age, desire teeth which show any wear. Some patients who have old plates on which the pink rubber has faded out so that it is about the color of a tan shoe object to the pink rubber on a new plate, simply because it is new to them. They have looked at the old one so long that anything different to them is wrong.—*C. W. Benson, D. D. S., Duluth, Minn.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

ERRATA.

The first line on page 508 of the June number belongs on page 507 and should have been the first line on that page.

ILLINOIS STATE DENTAL SOCIETY.

The Illinois State Dental Society held its forty-ninth annual meeting at Peoria on May 13-16, 1913. The following officers were elected for the ensuing year: President, Wm. H. G. Logan, Chicago; vice-president, W. A. Hoover, Gibson City; secretary, Henry L. Whipple, Quincy; treasurer, T. P. Donelan, Springfield; librarian, I. B. Johnson, Onarga.

The 1914 meeting will be the Golden Jubilee of the society, to be cele-

brated in Chicago. Date to be announced. Very respectfully, Henry L. Whipple, Secretary.

THE DENTAL PROTECTIVE ASSOCIATION.

It seems fair to believe there is a rather widespread opinion, both in the membership of the Association and outside of it, that it is the duty of the Dental Protective Association to defend the entire dental profession against demands by the owners of patents. On the contrary the Association undertakes nothing and assumes no obligations, primarily, except to its members. It is true that in the case of the crown and bridge patents and some others the entire profession were protected because the members of the Association could not otherwise be defended. In the case of the Taggart claims the Protective Association arranged for the protection of its members by a payment to Dr. Taggart so small that it seems incredible that anyone should object to it; whether it be regarded (in case Dr. Taggart's patents should finally be sustained) as payment for the use of the patented processes and instruments, or whether it be considered (in case Dr. Taggart's patents be declared void) as an acknowledgment to Dr. Taggart for the service he has rendered to his profession.

Some members of the Protective Association are demanding that every "process patent" be resisted by the Association "on principle." This demand seems rather Quixotic so long as the United States Government issues and upholds such patents. At any rate it is as well to postpone such a contention until such future time as the beneficiaries of some process patent are people outside, who have themselves rendered no valuable service to the dental profession. This was wholly the case with the Dental Vulcanite Company, and mostly so with the Crown and Bridge Company.

The suit decided in favor of Dr. Taggart in the lower court in the District of Columbia and against him in the Court of Appeals involved only one of his patents, and is not effective outside the District of Columbia.

Since the foregoing was written another suit has been decided in Chicago, "*Taggart vs. Moll*," in which the complainant secured a verdict against Moll on all four patents involving forty-four claims in all, both as a dentist practicing cast inlay work, and as a manufacturer making casting machines. It will thus be seen that the Washington suit did not conclude the litigation, and that today Dr. Taggart stands stronger than ever before the courts.

EDMUND NOYES.

NOTICE.

Competent research workers are wanted for the National Dental Association. State qualifications, experience, languages read, and preference for pathological, biological, pharmacological, metallurgical or anatomical work. Address, Weston A. Price, Chairman of Committee of the National Dental Association for Scientific Foundation Fund, 10406 Euclid Avenue, Cleveland, Ohio.

OBITUARY.

The following account of the death of Dr. J. O. Keller is taken from the *Morning Republican* of Findlay, Ohio:

Dr. Josiah O. Keller, a former resident of Rawson, Findlay and Ada, died in Chicago, Ill., Monday, April 7, and was buried at Tawa Creek cemetery near Rawson, Wednesday. Dr. Keller was born at Rawson, January 23, 1845, on his father's farm which is now a part of the village of Rawson. He lived at this place till 20 years of age, when he went to Minneapolis, Minn., teaching school several years. Entering the Cincinnati Dental School, he graduated about 1870 and practiced in Findlay and Ada until 1875, when he engaged in the drug and dental manufacturing trade in Fort Wayne, Ind., where he was very successful. In 1893 he located in Chicago, Ill., and

since that time has occupied his time chiefly in scientific dental research work. His death occurred at his home, 30 East Forty-fourth street, after a ten days' illness from diabetes. Surviving are the widow, Ermina J., two sons, LeRoy of Chicago, and Albion S. of New York, a sister, Mrs. Margaret Elzay, and a brother, I. Nelson Keller.

Dr. Keller was a charter member of Fort Wayne, Ind., Lodge No. 14, I. O. O. F., was a communicant early in life in the M. E. church, and a member at the time of his death of the First Presbyterian church of Chicago. Services were conducted by the Rev. W. W. Motter at the M. E. church of Rawson, and by the I. O. O. F. Lodge No. 564 of Rawson."

NATIONAL MOUTH HYGIENE ASSOCIATION'S SECOND ANNUAL MEETING.

The Second Annual Meeting of the National Mouth Hygiene Association will be held in Kansas City, Mo., July 9-12, 1913.

The Board of Governors will meet at the Hotel Baltimore at 9 a. m. on July 9th, 10th and 11th, to consider questions to be presented to the general body. These meetings are open to members of the Association. Those having matters which they wish to present to the Association for consideration must present them to the Board at one of these meetings.

The regular meeting of the Association consists of three sessions:

Friday, at 1:30 p. m.

Friday, at 8:00 p. m. (open to the general public).

Saturday, at 9:00 a. m.

A very interesting and instructive literary program is to be presented.

The Association has charge of the Mouth Hygiene Section of the Fourth International Congress on School Hygiene, and the Board of Governors' plan is to have, in so far as possible, the program duplicated at both the National Meeting and the Congress.

The most important subject to be presented to the Association will be the question of "Ways and Means for Conducting the Campaign of the Association in its General Presentation of Mouth Hygiene to the Public." A complete, practical, economic and co-operative plan which will permit every section of the country to begin an active appeal to the general public will be presented for consideration. It is desirable that every member be present when this important subject is presented for discussion.

W. G. EBERSOLE,

Secretary-Treasurer, 800 Schofield Bldg., Cleveland, Ohio.

RECENT DENTAL PATENTS.

- 1,033,562. Dental articulator, Ernst Eltner, Basel, Switzerland.
- 1,033,592. Water dropper for dental handpieces, Carl S. Jorgens, Minneapolis, Minn.
- 1,033,743. Tooth brush, Jerome J. Smiddy, Honolulu, Hawaii.
- 1,033,489. Making wax patterns for castings for dental work, Arthur W. Tatham, Detroit, Mich.
- 1,033,819. Dental syringe, George M. McMann, Detroit, Mich.
- 1,033,942. Dental instrument, Stewart D. Ruggles, Portsmouth, Ohio.
- 1,033,943. Lathe accessory, Wilhelm Ruppert, Porz-on-the-Rhine, Germany.
- 1,034,764. Dental vulcanizer, George L. Bruce, Baltimore, Md.
- 1,035,688. Artificial tooth crown and backing, George Carr, Paterson New Jersey.
- 1,035,239. Dental broach and holder, David A. Rosenthal, Pittsburgh, Penn.
- 1,035,744. Dental post extractor, Thomas W. Ross, St. Louis, Mo.
- 1,036,441. Dental apparatus, Fred E. Buck, Jacksonville, Fla.
- 1,035,950. Protecting dental work, Addison R. DePass, Columbia, S. C.

- 1,036,561. Dental process, Francis A. Carter, Chicago, Ill.
- 1,036,562. Artificial teeth, Francis A. Carter, Chicago, Ill.
- 1,036,563. Dental casting machine, Francis A. Carter, Chicago, Ill.
- 1,036,927. Dentimeter, Walter B. Struble, Jr., Portland, Ore.
- 1,038,063. Casting device for dental purposes, Joseph F. and W. G. Alexander, Seattle, Wash.
- 1,038,381. Blowpipe, Charles E. Johnson, Havelock, Neb.
- 1,037,962. Dental mold, Bernhard C. Moll, Chicago, Ill.
- 1,038,525. Rotary tooth brush, Henry M. Brenenstul, Bellevue, Ohio.
- 1,039,036. Blowpipe, Melbourne K. Dunham, Brookline, Mass.
- 1,039,420. Angle attachment for dental handpieces, James A. McDonald, Boston, Mass.

Copies of above patents may be obtained for fifteen cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Bldg., Washington, D. C.

FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

The most important Health Conference that has ever been held in this country is the Fourth International Congress on School Hygiene which will take place in Buffalo, August 25-30, 1913.

This Congress will deal with every phase of School Hygiene and will be attended by the leading hygiene and educational people throughout the world.

An entire Section has been devoted to Mouth Hygiene, with a large amount of floor and wall space set aside for an exhibit dealing with the same subject.

The organization of both the literary program and the exhibit has been placed under the supervision of the National Mouth Hygiene Association. This is the greatest opportunity that has ever been accorded the dental profession to present in an effective manner the important relation that Mouth Hygiene bears to the General Hygiene of the body.

To make a showing in keeping with the importance of this subject it is vital that the members of the organized dental profession throughout the country do their duty both as members of the various organizations and as individuals. A few individuals cannot make an impressive showing. It is therefore imperative that, in addition to a literary program and the presentation of an exhibit, a large number of dentists unite with the Congress and attend the meeting, thus establishing the dental profession's interest in and right to participate in the Hygiene Conferences of the world.

An elaborate literary program has been prepared and an extensive exhibit is being arranged; committees having been appointed representing each state in the Union.

W. G. EBERSOLE,

Chairman, Division Mouth Hygiene, 800 Schofield Bldg., Cleveland, O.

FIRST PAN-AMERICAN DENTAL CONGRESS, RIO DE JANEIRO, OCTOBER, 1913.

Rio de Janeiro, by many considered to be the most beautiful capital in the world is in the coming month of October, to be the seat of the FIRST PAN-AMERICAN DENTAL CONGRESS, an event of scientific importance which should mark an epoch in the progress of our Profession.

We want your support,—but more than that, we WANT YOUR COMPANY. We are inviting you as a guest, and as such the expenses of your stay will be defrayed by the Congress.

Can you not, instead of going to Europe FOR THE SEVENTH TIME, come to Brazil FOR THE FIRST? You would have an opportunity to gaze upon the most beautiful and fantastic scenery, enjoy an unrivalled climate, and witness the astounding progress of what is, after all, an American city.

Whether you are dentist or manufacturer, our Congress should attract you—the scientific interest of its deliberations is assured by the professional standing of the members of its Commission—its organization is under the official auspices of the Brazilian Minister of Foreign Affairs and others—and it will be the means of bringing together a large number of keen, wide-awake dentists from all the Americas who are anxious to get acquainted with any novelties that might be exhibited.

The work of the Congress will be divided into five sections:

1. Biology, and Related Sciences.
2. General Clinical Work.
3. Prothesis and Orthodontia.
4. Electricity and Photography as applied to Dentistry.
5. History, Bibliography and Dentology.

These sections will comprise studies of Anthropology, Ethnology, Comparative Anatomy, Pathology and Palæontology.

The building in which the congress will be held, the Monroe Palace, is admirably adapted for the purpose—a beautiful edifice affording ample space for sessions and exhibits.

The Congress has for its Commission a group of professional dentists who are right on the spot; this does not prevent it from being thoroughly PAN-AMERICAN—whether you are from California or Cuba, Arkansas or Argentina.—COME, AND YOU WILL BE MADE WELCOME.

Further details regarding the Congress, as well as information re transportation facilities, hotel accommodation, etc., may be obtained from Mr. Reginald Gorham, 4727 Hazel Ave., West Philadelphia, Pa.

PROF. R. DE PEREIRA E MAIA,

President of the Central Committee of the First Pan-American Dental Congress, Rua Goncalves Dias 82, Rio de Janeiro, Brazil.

NATIONAL DENTAL ASSOCIATION.

All reputable practitioners of dentistry and medicine are cordially invited to attend the 1913 session of the National Dental Association, which will be held in Kansas City, Mo., July 8th to the 11th.

This will probably be the most important meeting in the history of this Association, owing to the fact that all the State Dental Societies, that have met since the Washington meeting, have voted to become Constituents of the National.

The officers and committees have prepared an interesting program, but it is impossible to incorporate the Clinical Program in the Journal announcements; however, the Clinical Committee does not expect to present the number of clinics which have been listed for the past few years, but have planned to present a smaller number, which are classified so that they will be most interesting.

The following is the Literary Program:

President's Address, Frank O. Hetrick, Ottawa, Kan.; Scientific Foundation Fund, Weston A. Price, Cleveland, O.; Orthodontia and Its Relation to Dentistry, Roscoe A. Day, San Francisco, Cal.; Crown and Bridge Work, J. L. Howell, Denver, Col.; The Missing Steps in Platemwork, Gail W. Hamilton, Council Bluffs, Ia.; The Saliva, Percy H. Howe, Boston, Mass.; Conflicting Opinions Concerning the Manufacture and Use of Alloys for Dental Amalgams, Marcus L. Ward, Ann Arbor, Mich.; A Preliminary Report on the Action of As₂ 63, Herman Prinz, Philadelphia, Pa.; Physiological Action of Nitrous Oxide Oxygen, Analgesia and Anesthesia, Carl G. Parsons (M. D.), Denver, Col.; Something of the Etiology and Early pathology of the Diseases of the Peridental Membrane, with Suggestions as to Treatment, Arthur D. Black, Chicago, Ill.; The Value of the Radiograph in the Practice of Modern Dentistry, Howard R. Raper, Indianapolis, Ind.:

Dental Educational Harmony, G. S. Junkerman, Cincinnati, Ohio; Prophylaxis, illustrated with lantern slides, Burton Lee Thorpe, St. Louis, Mo.; The Etiology and Progress of Dental Caries, Edgar D. Coolidge, Chicago, Ill.; The Application in Practice of What is Known Concerning the Diagnosis and Treatment of Diseases of the Dental Pulp, Harry B. Tilleston, Louisville, Ky.; Periapical Infection, Clarence J. Grieves, Baltimore, Md.

Railroad and Hotel Information.—The Central Passenger Association, the Western Passenger Association and the South-western Passenger Association, have granted an open rate of 2 cents per mile in each direction in their territory, with a minimum excursion fare of \$1.00. Tickets on sale the 5th to the 8th of July and good returning up to July 20th. The Trunk Line Association has declined to make any concessions. Additional information can be secured from any local railroad agent.

A list of the hotels, and their rates, have been published and we save space in this announcement by referring you to the June Journals. Those anticipating attending this meeting should promptly make reservation, if this has not already been done.

FRANK O. HETRICK, President
Ottawa, Kan.

HOMER C. BROWN, Recording-Secy.
185 East State St., Columbus, Ohio.

DEATH OF DR. C. FRANKLIN HARTT.

Dr. Charles Franklin Hartt, for thirty-three years a practicing dentist in Chicago, died June 17, at his residence, 6434 Woodlawn avenue. He was born in Mendota, Ill., in 1859. He was a member of the Chicago Dental Association and of the South Shore Country Club. He is survived by a widow, two daughters, and one son. The funeral was held June 20, at Oakwoods Chapel, Chicago.

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, AUGUST, 1913.

No. 8

HISTORY OF OPERATIVE DENTISTRY.*

BY E. D. COOLIDGE, D. D. S., CHICAGO, ILL.

In treating this immense subject in a brief way I have tried to select from the available literature on the subject the parts which seemed to me to be the most interesting in the development of the profession up to the severing of Dentistry from Medicine. There are many interesting things I found necessary to omit on account of a little consideration for the listeners. History is a record of past performances and we usually are inclined to look more eagerly for the new than to study the past. However, a knowledge of the cards already played gives one a better chance to know what play to make next.

I have made three divisions of time in which to treat the subject; the first period covering a space of 5,000 years beginning 3,700 B. C. and closing with the Crusades in the 13th Century. The second, from the Crusades to the founding of the first Dental School marking the severing of our profession from medicine. The second period carries dentistry through the Dark Ages of the medieval times to 1839 in the modern times. Usually modern dentistry is considered to begin at the period in which Fauchard lived, in the last part of the 17th and early 18th Century. By this division I wish to put more emphasis upon the beginning of dentistry as an entirely separate profession. This move of independence was such a stimulus to the profession that in less than seventy-five years it has placed it in such a position in the scientific world that to-day it is recognized as among the greatest of professions rather than a branch of any.

*Read before the Northern Illinois Dental Society, October, 1912.

FIRST PERIOD, 3700 B. C.—CRUSADES (13TH CENTURY A. D.)

To give the exact date of the beginning of operative dentistry would be a very difficult if not an impossible thing. The last two centuries have brought in an exceedingly large proportion of the development of dentistry which is considered as operative, altho the early ages as well as the medieval period contributed to the evolution and development of it in a way which is as important as interesting. In the days of Egyptian pomp and glory where dynasties ruled with a power that subjected the surrounding countries to their authority, dentistry was seen as a branch of medicine practiced by a few who undertook to treat diseased conditions of the teeth. Crude though the operations were, yet they were the beginnings of operative dentistry and from these simple operations for relieving pain in the teeth and efforts to keep them clean, has evolved that great part of our professional practice known as operative dentistry. That they filled teeth at all or had any instruments especially designed for operations on the teeth seems quite doubtful, for the writings of those times do not speak of them.

The most important of the earliest authentic records is that of the papyrus of Ebers which dates back as early as 3000-4000 years B. C. to the time of the fourth dynasty which was 3427 B. C. and perhaps farther. This papyrus was found and obtained by Prof. Geo. Ebers, a celebrated Egyptian scholar, in the town of Luxor in upper Egypt in 1873, and may be found in the library of the Leipzig University. (He published a translation of it with explanatory notes in 1875 and Dr. Henrick Joachim translated the entire document into German with an introduction and explanatory notes in 1890.) The papyrus contains a part devoted to medicine and in this are many prescriptions for toothache and instructions regarding the care of the teeth. There is nothing said of filling the teeth or of extracting teeth, so it is supposed there were no instruments for any dental operations. One remedy is prescribed "against the throbbing of the bennut blisters in the teeth" and others to "cure the bennut blisters in the teeth and strengthen the flesh (gum)". The meaning of the term "Bennut Blister" is not known, but is supposed to be an abscess of dental origin. There are also prescriptions for the "gnawing of the blood in the tooth," Judging from these prescriptions one would naturally conclude that they had a knowledge of the teeth and some of their diseased conditions which

they attempted to treat. From these early days at least 3000 years B. C. down to the dawn of the 18th or even the 19th Century, very little more was done in the way of pulp treatment than these early Egyptian "pastophore," as they were called, were able to do. Heroditus, the historian, about 500 years B. C. in his second book gives us evidence that there were medical men specializing in dentistry as well as other branches of medicine. (1) He says, "The exercise of medicine is regulated and divided among the Egyptians in such a manner that special doctors are deputed to the curing of every kind of infirmity; and no doctor would ever lend himself to the treatment of different maladies." Altho there is no authentic proof of any filling of teeth or any other operations on the teeth in Egypt at this time, yet it is only reasonable to suppose that there were such operations because in the surrounding countries, whose civilization was influenced greatly by the Egyptian, evidences are found in excavations to prove that there were dental operations at this time.

GREEK.

The Greeks succeeded the Egyptians in the art of healing as leaders, and those who devoted their lives to healing were the priests. One who became very prominent was Asklepius or Aesculapius, as he was afterward called. He is given the credit of being the father of dentistry. He was so successful in healing that he became looked upon as a divine being and was called the God of Medicine. His two sons are spoken of as physicians in the Greek army, at the "Siege of Troy." 1193-1184 and it is reasoned that he lived in the 12th and 13th Century B. C. (1). After the death of Aesculapius many temples were erected to the God of Medicine, the principal ones being at Cos, Cnydas, Rhodes and Agrigentum in Sicily. These temples became the centers of learning in medicine and all the works and writings were preserved here for many years. Here the priests of the temple gained their knowledge of the art of healing and were called "Aesclepiadae priests." In a temple of Apollo (1) a leaden instrument (plumbeum odontaggon) was found which was supposed to have been made and used by Aesculapius for extracting teeth. The fact that it was made of lead would be an evidence that little or no extracting was done except where the teeth were very loose.

(2) "A peculiar breed of serpents were sacrificed to Aescu-

lapius the sale of which was a source of great revenue to these priests. Aesculapius, under the image of a serpent, was worshiped by the Romans and if Eusebius is to be credited, the Egyptian Aesculapius was worshiped under the form of a divine serpent."

"In Arabia, Indian and China the serpent was looked upon as the symbol of life. Oriental nations believed it to be the most cunning of all animals, and immortal. The emperors of China bore the image of a serpent upon their breasts long before Moses made the brazen serpent to cure the Children of Israel from the bites of the fiery serpent."

"The winged wand entwisted by two serpents, known as the 'Caducius' is a symbol of prosperity; the rod represents power; the serpents represent wisdom, and the two wings, peace and activity. This has long been the emblem of medicine, and in the army of the United States it is the hospital stewards' insignia of office."

Hippocrates, supposed to be a descendant of Aesculapius, was born at Cos about 460 B. C. He was educated in all the then known works on medicine both in his own country and the surrounding cities where there was any advanced knowledge and he was instructed by the most noted men of his time. His practice and writings have contributed greatly in the progress of dentistry. He was a man of keen observation and a very analytical student of medical science. He was the first to give the number of the teeth of both dentitions and to give their time of eruption.

The following quotation (1) illustrates his keen observation and carefulness in diagnosis: "When a person has an ulcer of long duration on the margin of the tongue, one should examine the teeth on that side, to see if some one of them does not, by chance, present a sharp point." How often even in our own memory incorrect diagnosis has been made in pathologic conditions in the mouth and often the cause of reflected pain is misjudged. Physicians have often been hasty or have given too little consideration to the teeth and caused the patient much annoyance and inconvenience that might have been spared, had such advice as this been followed, which was given over 2000 years ago. Aristotle (2) called the greatest philosopher of Antiquity, lived from 384-322 B. C. He was the founder of Natural History and Comparative Anatomy.

ROMAN.

When the Romans became the most powerful people, having

conquered the surrounding countries, there were many of the noted philosophers and doctors who went to Rome, many of whom came from Greece. For several centuries there was little progress in the medical science, which is accounted for by the desire for ease and luxury which attended that time. Although the introduction of dentistry among the Romans is credited to the Greeks, yet it is supposed to have been practiced there to some extent at an earlier period and the absence of findings of dental appliances in the ruins and excavations is accounted for by the existence of laws that prohibited the burial of the bodies with any gold in the mouth.

In the first century Cornelius Celsus lived and practiced. His writing contains about all that was then known about medicine and dentistry. He writes of extracting, and pictures forceps for the operation. He also advocated filling the decayed teeth with lead before extracting. Celsus wrote a great deal about the care of the teeth and gums, and gave prescriptions for powders and washes. For gums separating from the teeth, he advocated chewing unripe pears and apples and keeping the juice in the mouth or keeping vinegar in the mouth.

Martial, 40-101 A. D., is the first to mention toothpicks in his writing. He also mentions the first dentist, Cascellius, "who," he says, "extracts or cures diseased teeth." However, this is doubted because there is no word in the Latin language to mean dentistry, and it is hardly reasonable to suppose that they would have men specializing in dentistry without a word in their language to express it.

Claudius Galen, of the second century, born about 131 A. D., was the greatest since Hippocrates. He had frequently been to the medical school at Alexandria and was educated by the best instructors of his time. His writings are the first (1) in which the nerves of the teeth are mentioned.

SARACENS AND ARABIANS.

The Saracens invaded and conquered Egypt in the seventh century and for religious reasons they destroyed the great library of Alexandria. Alexandria had been the center of learning for ages and it was a great catastrophe in the history of civilization, and little they realized the value of what they destroyed. About one hundred years later, however, they had translations made of

Egyptian, Greek and Roman into Arabic and Syriac of the writings and teachings of Hippocrates, Celsus, Galen and others, and these were preserved for hundreds of years. The religious views of the times made it impossible for the study of anatomy and the practice of surgery. This was all left to the servants of the physicians, and so surgery sank to a very low level.

Abulcasis, an Arabian of the tenth and eleventh centuries, tried to rescue surgery from the hands "of the impudent and audacious barbers." (1) In his writings are drawings of many instruments used in the practice of dentistry. He shows a set of fourteen instruments for cleaning and scaling the teeth. One of the most notable features of his writings are his many drawings of instruments. He also speaks of using gold and silver for ligating teeth when loosened, and is credited with being the first to recommend replanting teeth when fallen out from injury.

The Turks followed the Saracens and in the thirteenth century became the ruling force in the east. The crusades came and passed and the returning soldiers carried much knowledge of the arts and sciences back to the western parts of Europe and England. Science had been neglected and very little progress was made from the time of the Saracen conquest in the seventh century. The practice of medicine had been almost entirely in the hands of the monks and friars among the Christians. Surgery retrograded to its early stages and fell into the hands of the "farriers, barbers and swine-gilders."

SECOND PERIOD, CRUSADES—FOUNDING OF FIRST DENTAL SCHOOL, THIRTEENTH CENTURY TO 1839.

After the Crusades had passed many Greek scholars left their home country when the Turks kept control of it. They wandered westward and settled in Italy, Spain, France and England. Fallopius at the Universities of Pisa and Padua and Eustachi at Rome did a great deal of work in dental embryology. They described the dental follicle and gave a splendid account of the structure and uses of the teeth. Eustachi disagreed with the writings of Celsus on the formation of the permanent teeth from the roots of the milk teeth. He claimed that calcification begins at the crown and extends rootward to the apex.

The barber-surgeon had been in prominence for several cen-

turies at this time, while the practice of medicine was taken care of by the physician. The first degree of Doctor of Medicine was conferred upon William Gordenia at the college of Asti, Italy, in 1329. In the sixteenth and seventeenth centuries surgery became more elevated and only the minor surgery was left to the barbers. This included most dental surgery and extraction of teeth.

In Paris toward the end of the fifteenth century the surgeons appealed to the Faculty of Medicine and were successful in gaining certain distinctions over the barbers by paying an annual tribute to them of sixteen sous. In 1505 the barbers and physicians of Paris formed an agreement for a consideration which admitted the barbers as members of the medical faculty and changed their title from "Barbi-Tonsores to "Tonsores Chirurgici." The surgeons did not like this turn of affairs and ten years later they appealed to the University of Paris and secured authority to form a college of their own with power of creating Masters, Bachelors, Licentiates and Doctors of Surgery. In 1596 the surgeons were successful in establishing a rule which compelled the barbers to call a surgeon in all cases of importance and left a barber only a small field of operation which was largely the teeth. Ideas of specialization began to develop and research work was done by many and the title of Surgeon Dentist was given in 1622 to several men in France.

In 1484 the death of Giovanni of Arcola is recorded. He had been a professor in the University of Bologna and later at Padua. His name should be prominent in operative dentistry for being the first whose writings speak of gold leaf for filling carious teeth. He does not give the impression that it is a new procedure in his time, so perhaps it had been used for many years previous.

A German writer (2), Peter Jordon, about 1532, has written on "A Treatise Upon All Kinds of Infirmities and Diseases of the Teeth," and a later work thought to be his, dated 1859, called *Zeen Artznei* (tooth doctoring). One thing of especial interest in this book is the treatise on tartar. He says (2), "Who desires to retain white teeth must abstain from honey and from sleep after heavy eating." He advises the cleaning and scraping of all teeth coated with tartar and the use of pumice for cleaning. He claims that the premature loosening of teeth is due to both constitutional and local disturbances and recommends remedies for both. His instructions for cleaning the teeth were very rigid, and it is quite

evident he had given this part of the treatment of teeth a great deal of consideration.

Ambrose Paré about 1525 was apprentice to a barber surgeon, and later became called "The Father of Modern Surgery." Dr. William H. Trueman in writing of Paré says, "He lived to see his work appreciated, his methods generally adopted, and the science he loved placed fairly upon a scientific basis, and died in 1590 honored and respected by all. The work he so well began went steadily on, and toward the close of the seventeenth century the surgeon and dentist had so far separated from and advanced beyond their former companion, the tonsorial artist, that they began to claim an equal standing with the profession of medicine and after a vigorous struggle they gained their point. During their contest the dentist and the surgeon fought for their rights side by side, and at its conclusion, in France, the physician, surgeon and dentist became professional brothers. There and then, possibly for the first time since the dark ages, dentistry assumed the place she has since held, ever recognized and unchallenged, a science among sciences."

Dentistry had advanced by the beginning of the eighteenth century to quite a state of development. Before this time much of the knowledge and skill of the various men who were leaders of their times had been kept out of print. Personal jealousy and a spirit of selfishness kept most of those who did things from writing about it. So, many things which appear in print from this time on had been known and practiced for many years previous. France led the other nations in development and by the first of the eighteenth century required all desiring to practice dentistry to pass an examination.

Pierre Fauchard, called the founder of modern scientific dentistry, lived from 1690-1761. In 1728 a book was published by him under the title of "The French Dentist," which represents what dentistry was at that time. In the preface of the book, which is quite extensive, there is much valuable information regarding the condition of medicine and dentistry at that time. "If (2) some be found who look upon the diseases of the teeth as of little importance and who, therefore, do not consider it worth their while to direct their care or attention particularly upon them, they thereby establish especial proof of their poor knowledge of anatomy and pathology of these parts." "Although the teeth are the hardest part of our body, and therefore little subject to treatment, they

must in certain cases be burned (cauterized), filled, filed, tied together and finally extracted through the skillful hand of the surgeon." He writes of seventy-one of the diseases of teeth which he has treated and the treatment, and describes the instruments used in operating. There had been an opinion among those who attended the teeth that a certain condition of the teeth, when in a bad state of decay, was attended by worms. This opinion had existed for many centuries. Fauchard does not dispute this idea, but he states that if they have been found they came from filthy conditions present in the mouth with decayed food and viscid saliva. He further states that he has made careful examination, both with and without the aid of the best magnifying glass he could find, and yet has never seen them. Fauchard writes that "incipient caries may be cured in three ways: first, by application of the essence of cinnamon or essence of cloves; second, by cautery; and, third, by filling with lead."

He (2) describes the operations that may be undertaken upon the teeth as follows: "They may be cleaned; they may be straightened; they may be made shorter; caries may be removed from them; they may be cauterized; they may be filled with lead; they may be separated; they may be placed in proper position; they may be fastened; they may be removed from the jaw; they may be replaced in the jaw; or they may be taken out and placed in another person's mouth, and at last, teeth are artificially constructed and may be placed instead of those that have been lost." He speaks of lead, tin and gold as filling materials.

In England the "Company of Barber Surgeons" was incorporated by Edward the Fourth in 1461, and a law was passed in 1511 requiring an examination. At a later date the title of this organization was changed to the "Company of Barbers and Surgeons." In 1745 the two were separated and the barber was only permitted to extract teeth and the "Surgeon Company" was formed. In 1800 from this Surgeon Company evolved the "Royal College of Surgeons" of London.

John Hunter, renowned for his great work on anatomy, was born in Scotland, 1728. It is to this man that much of the development of dentistry in the eighteenth century was due. He felt that the teeth were too important members of the human body to be treated by uneducated mechanics, as is shown by his introduction in his "Natural History of the Human Teeth." "The (2) impor-

tance of the teeth is such that they deserve our utmost attention, as well with respect to the preservation of them when in a healthy state, as the methods of curing them when diseased. They require this attention, not only for the preservation of themselves as instruments useful to the body, but also on account of other parts with which they are connected, for diseases in the teeth are apt to produce diseases in the neighboring parts, frequently of very serious consequences, as will evidently appear in the following treatise." The author then continues to describe many diseased conditions of the mouth and teeth. He was a great student, a great surgeon and a great writer and teacher. He experimented successfully in transplanting living teeth and replanting diseased teeth after being boiled, cleaned and filled. In this work he was very skilled and successful. His private museum was bought by the government after his death in 1793 for 15,000 pounds, which was considered only a fraction of its real value, and given in trust to the college of surgeons.

In the American colonies there is no record preserved of the barber surgeons. However, it is known that there were some here. Robert Wooffendale was among the earliest dentists coming over from England in 1766 and settling in New York. James Mills is credited with being a little earlier than Robert Wooffendale, but the date of his coming is not certain. John Baker came to Boston in 1767 and remained several months and it was with him that Paul Revere, who made the famous "Midnight Ride," gained his knowledge of dentistry. Le Maire settled at Philadelphia in 1784. Isaac Greenwood was the first American born dentist and Josiah Flagg the first who especially prepared himself for dentistry in this country. John Greenwood, grandson of Isaac Greenwood, was the dentist to whom Gen. George Washington went for services. There are others to whom operative dentistry is indebted for its progress, only the limited amount of time allowed to cover this vast field prevents me from giving a more complete history of the early operators.

THIRD PERIOD—FOUNDING OF FIRST DENTAL SCHOOL, 1839, TO THE PRESENT, 1912.

Above all others of the early nineteenth century, whose names stand out in prominence for their great service to dentistry, are

Horace H. Hayden and Chapin A. Harris. These two men together are responsible for dentistry being separated from the medical profession and becoming the profession it now is. To them is the credit of forming the first dental school and the first dental journal in 1839 and the first dental society in 1840.

With the founding of the Baltimore College of Dental Surgery the field of dentistry was divided into two parts—the theoretic and the practical. In 1852 the chair of “practical dentistry” was divided and a chair of “operative dentistry” and one of “mechanical dentistry” was formed. Although operative dentistry dates back to the beginning of the records, yet the department has only been distinguished as such, since 1852, a period of sixty years, and in this short period most of the important advances in operative dentistry have been brought into existence.

I have endeavored to show how dentistry was first practiced as a part of medicine and was carried along as such until in the middle ages, when the barber acted as surgeon, and extracted teeth. However, never was dentistry in the hands of the barber entirely. It originated as a branch of medicine and has always been associated with it until 1839, when Horace H. Hayden and Chapin A. Harris started the first college of dental surgery, when it became a profession by itself, separate and distinct from medicine. From this time on I will consider the different procedures in operative dentistry separately, giving a little of the early development of each one in its turn.

EXTRACTING.

Next to treating teeth for the relief of pain, probably extracting is the oldest part of operative dentistry. There is no mention of extracting in the papyrus of Ebers, so it is supposed to have originated at a later date. As early as the thirteenth century B. C., Aesculapius speaks of a leaden forceps (*plumben odontogon*) for extracting loose teeth. This instrument is supposed to be in existence at the temple of Apollo at Delphi. The fact that the instrument is made of as soft metal as lead is, leads one to suppose that only the very loose teeth were extracted. In the fifth century B. C., Hippocrates speaks of the same leaden forceps for extracting. That he considered it a very simple operation is shown by the following quotation. (l. p. 52.)

"These are the instruments necessary to the doctor's operating room and in the handling of which the disciple should be exercised; as to the pincers for pulling out teeth, anyone can handle them, because evidently the manner in which they are apt to be used is simple."

It was the custom in the ancient days to use some method of loosening teeth before extracting. Cornelius Celsus, in the first century, did not advise extraction unless no treatment could be found to relieve the pain, and if the tooth continued to ache he says, "If (1) the pain renders necessary the removal of the tooth this may be made to fall to pieces by introducing into the cavity a pepperberry without its skin, or a berry of ivy pared in the same way." A century later it was customary to cover all but the aching tooth with wax and then holding a liquid in the mouth for an hour loosened the tooth enough to be extracted with the fingers. Galen recommended the root of pyrethrum kept in strong vinegar for forty days and then pounded, as the agent to loosen the tooth. It was customary to fill the cavity with lint to keep it from crumbling, and later lead was recommended. The gum was cut all around the tooth and detached and then the tooth shaken loose with the forceps. In the eleventh century, Abulcasis, an Arabian, writes of extracting and pictures an instrument for shaking the teeth loose and others for extracting after loosening them. He also pictures elevators for removing roots.

Giovanni of Arcola of the fifteenth century was the first to speak of the pelican in his writings, and pictures it with two other instruments for extracting, which show the tendency of evolution in forceps.

From the fifteenth century until the writings of Fauchard there is very little change in the instruments for extracting. That they often made mistakes and extracted the wrong tooth is shown by this remark. "Whenever (l. p. 294) a wrong tooth is extracted by accident, it ought to be immediately replanted and the same ought to be done when violent pain renders it necessary to extract a tooth that is much decayed, as the patient is thus relieved without losing the tooth."

The following case of replantation is described in Fauchard's own words (l. p. 282.). "On April 10, 1725, the eldest daughter of M. Tribucot, organ builder to His Majesty the King, called

on me. She was tormented by violent toothache, caused by caries of the first small molar on the right side of the upper jaw; but, although she was desirous of having the tooth removed, to be freed from the pain, she, on the other hand, could not without difficulty make up her mind, thinking of the disfigurement which its loss would occasion, and thus it was that she was induced to ask me if it would not be possible to put it back again after having extracted it, as I had already done in the case of her younger sister. I replied that this might very well be done, provided the tooth came out without being broken, without any splintering of the *alveolus*, or great laceration of the gum. The patient, upon this, completely made up her mind. I extracted the tooth very carefully so as not to break it, neither were the gum nor the *alveolus* injured in any way. I therefore was induced to put the decayed tooth back in its *alveolus*, and having done this, I took care to tie it to the neighboring teeth with a common thread, which I left in position for a few days after being replanted. To better preserve it, I stopped the carious cavity."

The "key" for extracting was first spoken of by the celebrated French surgeon, Garengect (1688-1759) and was thought for a long time to have been invented by him but other writers claim that he only perfected it. The origin is uncertain and may have been in England or Germany.

A book by James Snell (2), of the Royal College of Surgeons, published in 1832 in Philadelphia of 200 pages has fifty pages devoted to extracting of teeth. He advises the use of the forceps in extracting almost all teeth but admits that skill and much experience in their use are required and in the absence of that, he advises the use of the key for extracting bicuspid and molars. He considers the key the modern instrument and the forceps as the ancient, as is shown in the following statement, 2 p. 162: "In this country (England) during the last century the use of the forceps in extracting the back teeth, appears to have in a great measure discontinued in favor of the key instrument, until the former method was brought again into notice by Mr. Cartwright." And again: "As, however, but few persons enjoy the opportunity of acquiring the perfect mastery of the forceps and it will be prudent in the majority of practitioners to resort to the use of the key."

Wooffendale in 1783 says that some teeth cannot be extracted

on account of being locked in the jaw by crooked roots. However, after a few weeks these roots will usually loosen up and can be easily removed.

Koecker speaks of the use of the key, the punch and pelican, and says that forceps at present are only useful for removing loose teeth. However, he says the first mentioned instruments are things of the past.

After Hunter's time a wave of feeling against extracting seemed to pass over the dental world and the replanting and transplanting of teeth became quite common. Le Maire claims to have transplanted 123 teeth in a period of six months.

Implanting of teeth into the jaw where teeth have been missing for some time has also been practiced to a certain extent. Dr. Younger (2) of San Francisco and later of Chicago and Paris has been successful in this work and among the first to perform it.

"The (2) first reasonably complete set of forceps was the work of Dr. J. F. Flagg in 1828." (History of Dental and Oral Science in America.)

One of the most serious problems of the dentist was that of pain attending the extraction of teeth. The crying need of some agent to relieve this suffering kept the minds of the leading men busy in an effort to find something. At last one of these patient workers was rewarded and others soon followed with other discoveries.

ANESTHESIA.

Horace Wells (6), December, 1844, attended a lecture on "Chemistry of Nitrous Oxide and Other Gases," by Dr. Colton, a well-known popular lecturer. The next day he went to Dr. Colton and asked him to give him nitrous oxide while he had a tooth extracted. He was so favorably impressed that he began giving it to his patients and with success. He asked permission to give a public demonstration at the Massachusetts General Hospital. The face piece of the apparatus was removed a little too soon, unfortunately, and the patient cried out while the tooth was being extracted. The audience was skeptical to begin with, and this brought out their hisses and hoots and their laughter. However, he and his friend Dr. Riggs continued to use it in their practice, and to Horace Wells is the credit of the discovery of its use. He never made

any more demonstrations and his failure to convince the public of the value of the discovery preyed upon his mind more and more, until he finally ended his life by inhaling ether to excess in 1848. A monument was erected to him with this inscription:

"Horace Wells,
who discovered Anaesthesia,
Dec. 10th, 1844."

Nitrous oxid was not used generally until 1868, although repeated efforts were made to demonstrate it.

William T. Morton (6) of Baltimore, another dentist, discovered sulphuric ether anesthetic as a result of experiments to extract teeth painlessly. After Horace Wells' experience at the public demonstration he abandoned nitrous oxide and sought something else. At last by the suggestion of a chemist of Boston he tried sulphuric ether. He found it successful on animals, so he finally experimented on himself in his own operating chair, inhaling ether from a handkerchief. He lost consciousness and later awoke with one of the most valuable discoveries in medical or dental history. Sulphuric ether was first used in surgical operations on October 16, 1846. *Anesthesia in Dental Surgery*, Thomas D. Luke.

Cocain (5 p. 162) as a local anesthetic was recommended by Karl Koller of Vienna in 1884. He became convinced of its useful application to surgery by taking a solution in his mouth and finding that it produced a numbness of the tongue. In 1886, Dr. Bleichsteiner introduced it in extracting teeth in Paris. Its early use was attended by a considerable amount of poisoning and even collapse. Even 6% of the cases were reported to collapse. It was introduced in dentistry in America by 1885, for in the *Cosmos* (Vol. 27, p. 78, 1885) J. P. Carmichael of Milwaukee has written about its use as a local anesthetic for small operations in the mouth, for painless extraction of the teeth, and for dental operations. In the *Cosmos* (Vol. 27, p. 321, 1885) Dr. A. H. Thompson has written on "Experiments with the New Anesthetic, Hydrochlorate of Cocain."

It was looked upon with great enthusiasm, especially for an aid in extracting. With this anesthetic the patient could remain conscious while the operation was performed. Only the disastrous results checked the wave of enthusiasm that it caused, but as it became

better understood that difficulty was to a considerable extent overcome.

CARIES.

Attention was probably first brought to the teeth of man because they troubled him; because there was pain. This to the man of ancient times was a bad sign, an evil omen or a visitation of an angered deity whose vengeance was inflicted on account of some deed that had caused the anger of the deity. Sacrifices and offerings were made to appease the wrath of the god and when the pain ceased there was rejoicing because the sufferer had been reinstated in the graces of the deity. In the papyrus of Ebers, which dated back to the 13th Century, B. C., there is evidence that they had caries and treated it, but nothing is said of dental operations or of instruments for such work. There seems to be very little written about caries except the treatment for it, which was one of the most popular subjects. Early in the 16th Century an unknown author has written, in the German language, "Caries is a disease and evil of the teeth in which they become full of holes and hollow, which most often effects the back teeth; especially so when they are not cleaned of clinging particles of food which decompose, producing an acid moisture (literally a sharp moisture), which eats them away and destroys them so that finally with much pain they rot away little by little." (Black, *Op. Dent.*, Vol. 1, p. 60.) Again he says: "In the third place, the hollow place is done away with (taken away—removed) which is done in one of two ways. First, the soft part of the cavity and the decayed part is cut away with small chisels, knives, files or other suitable instruments, and cleaned, as is well known to practitioners. Then for the saving of the remaining parts of the tooth, the cavity is filled with gold leaf. Otherwise one may use a suitable gum prepared with nutgalls and hyssop to fill the cavity after cleaning it." (Black, *Op. Dent.*, Vol. 1, p. 61.) Most writers in their statements went no further than to say that the teeth rot or decay away without any attempt of explaining.

Fauchard's writings of 1728 with 2nd and 3rd editions in 1746 and 1786 do not show any definite conception of the cause of dental caries. He speaks of gold for filling carious cavities, but condemns it apparently for the expense, and because some unscrupulous persons had practiced deception upon the people by using tin prepared

to appear like gold. He preferred lead or tin leaf for filling materials. Dr. Black further says: "John Hunter, writing in English (1778) expresses very clearly a different view, in which he says: 'The most common disease to which the teeth are exposed is such a decay as would appear to deserve the name of mortification,' with which he expresses some dissatisfaction as being an incomplete explanation of the diseased process. This, with other writings by the same author, shows that in considering the diseases of the teeth, he was following closely the lines of thought of his time of what we now know as 'necrosis of bones.'

"Fox (1806) expresses a similar view, which, with slight modification, was repeated by Bell (1825), who proposed the term 'dental gangrene' to take the place of the more common terms 'decay' or 'caries.' 'This seems to have been the most common view of medical men of that time, and with slight modification was repeated by most writers. All of these men regarded caries of the teeth as being a result of inflammation and as beginning within the dentin instead of upon the surface of the enamel. Köcker, of Philadelphia (1830), speaks of decay penetrating the enamel from within outward, saying that it 'had thus formed a natural outlet for the bony abscess.'

"Robertson (1835) expresses a different view, which, in its main features, agrees with the earlier views of an anonymous author. But Robertson is more explicit in the detail. According to this view, caries of the teeth resulted from the action of an acid generated by the decomposition of food particles or fluids, which lodged at particular points about the teeth and dissolved out the calcium salts of which the teeth are composed. These points of lodgment were shown to be the points at which caries made its beginning, as in pits and deep grooves in the occlusal surfaces, between the teeth (proximal surfaces) or about the margins of the gums."

This theory of the chemistry of caries became generally accepted in Europe and America. "A knowledge of histology began to be developed. The cell theory of the construction of organic bodies, animal and vegetable, was propounded and rapidly assumed the general form in which it stands at the present time. Makers of microscope lenses rapidly improved them because of the encouragement and patronage induced by these studies. In the midst of this, John Tomes, of London, was studying the microscopic structure—the histology of the teeth and bones, and by 1860 this was developed almost

as completely as it stands today. It is true that since then much more exactness of method and greater accuracy of detail has been added, but the full foundation of our knowledge of dental histology and the development of the teeth was laid by John Tomes."

"Miles and Underwood of London (1881) determined definitely that the enlarged tubules in dental caries contained micro-organisms, by the use of anilin dyes discovered by Dr. Koch, the German bacteriologist, but they were unable to go farther for lack of better facilities for division of species of micro-organisms and the determination of their physiological characters in the production of fermentations or putrefactions." *Black Op. Dentistry*, Vol. 1.

Dr. W. D. Miller, who worked with Dr. Koch, was the first to "separate the micro-organisms found in the mouth or in carious dentin into species and determine the character of each in the production of acid fermentation or other forms of decomposition." The finding in the dental tubules of micro-organisms, which, when growing in artificial culture in the presence of any form of sugar or starch, uniformly produces lactic acid, which in time dissolved the calcium salts of the tooth tissue, completed the full explanation of the local changes taking place in caries of dentin, but the cause and nature of caries of enamel was not so clearly made out."

"The outcome of this work has finally given complete and exact knowledge of the steps in caries of dentin." (*Black, Op. Dent.*, Vol. 1, p. 62.)

The work upon caries has been carried on by Dr. G. V. Black and the chemical theory of caries of enamel and dentin has been differentiated and made more distinct. His work has been largely in investigating the beginning of caries in enamel, its causes and progress. The controlling of caries by "extention for prevention" is one of the most impressive features of his work.

In Dr. Black's own words in his general statement on caries, he says: "Caries in its simplest expression consists in a chemical dissolution of the calcium salts of the tooth by lactic acid, followed by the decomposition of the organic matrix, or gelatinous body, which in the dentin, is left after the solution of the calcium salts. In caries of the enamel, the whole substance of the tissue is removed by dissolving out the calcium salts, there being so little organic matrix in the enamel that it will not hang together; consequently a cavity is formed by the simple solution of the calcium salts of which it is com-

posed—caries of the dentin is different from caries of the enamel, in that the organic matrix is sufficient in amount and consistence to retain its histological and physical forms after the solution and removal of the calcium salts. With the removal of these by an acid, the enamel will have disappeared entirely, but the dentin will not suffer any change of form. Therefore, the simple solution of the calcium salts leaves a softened matrix in the dentin and does not form a cavity. After the solution of the calcium salts there is a decomposition of this organic matrix progressing from without inward, breaking it up and finally forming a cavity." (Black, *Op. Dent.*, Vol. 1, p. 65.)

The theory of plaque formation has received a considerable amount of attention in later years. Williams has contributed a good deal to the recent work on caries, Kirk, Cook, Low, Waugh and Jones and others could be mentioned, who have also contributed valuable writings on this subject.

FILLING TEETH.

The first references to filling teeth that I have found are those simply for a convenience in extracting to prevent the tooth from crushing under the forceps. As early as Celsus, in the 1st Century, this was a common practice, both lint and lead being used. If any carious teeth were filled at this time except for the purpose of extracting, there is no mention of it. The Persian writer Rahzes of the 9th Century claimed that caries of the teeth was identical with that of the bones, "To hinder its progress and propagation to the neighboring teeth," he advises, the carious cavity to be filled with a "cement composed of mastic and alum." (*Hist. of Dent.*, Guerini, p. 122.) Guy de Chauliac, in the middle of the 14th Century, mentions the materials for filling teeth as gallnuts, root of cyperus, mastich, myrrh, sulphur, camphor, wax, ammoniacum, assafetida, etc., but gives no rule or instruction for their preparation or use. Giovanni of Arcola, professor at Bologna, and afterward at Padua (who died in 1484), wrote in regard to filling teeth, and advised gold leaf as the best material. He does not speak of it as if it were a new operation, however, so we are left to suppose that gold had been in use for some time. He advised that the operation should not be performed with too great violence. This is the first mention of gold on record and this man has the credit of being the first to write about its

use. Giovanni of Vego (1460-1520) also speaks of filling decayed teeth with gold leaf. A reference to some Arabian writings of questioned authenticity dates the use of gold for filling teeth back to the latter part of the eighth Century. Even the renowned Ambrose Paré (1517) does not speak of filling teeth in his writings more than just as an aid for extraction. Fauchard's (1690-1765) writings contain one chapter on stopping of decayed teeth and the materials mentioned are lead, tin and gold. He writes as follows: "Fine tin is preferable to lead, for lead turns black much more easily and is much less durable; both are preferable to gold, because lighter and adapting themselves better to the unevenness of the carious cavities. Besides, gold being dear, not every one can or will make the corresponding outlay." (*Hist. of Dent.*, Guerini, p. 285.) He also opposes the use of gold because of some dentists dishonestly coloring lead or tin to look like gold and charge the patient for gold. He describes no method of cavity preparation whatever and at that time the dental pulp was not taken into consideration. Fauchard says: "If the sensibility of the carious cavity be too great, the lead ought only to be pressed in very lightly at first, then after one or two days a little more, continuing thus until it is properly compressed and fitted in, always provided of course, that the pain does not increase. The sensitive parts of the tooth become thus more easily used to the pressure of the lead, and the pain is in this manner avoided or moderated." (*Hist. of Dent.*, Guerini, p. 288.) Bourdet, a French dentist, who became celebrated by his work and writing and was dentist to the King wrote a book on dentistry in 1757. In this book he writes of gold for filling and often extracted the tooth to fill it, replanting it immediately after the operation. John Hunter, the celebrated surgeon dentist in the 18th Century, of England, preferred lead for filling teeth, while Benjamin Bell, one of his contemporaries, advised the use of mastic, gumlac, or wax.

Until the dawn of the 19th Century filling teeth or "stopping" teeth was mostly a very temporary operation; only the most skilled operators were able to use the metals for filling at all and the cases where a reasonable degree of success attended was probably very small. One writer speaks of a lead filling being in use for 40 years, but this was probably a rare occurrence. In 1832 a work on dentistry was published by James Snell (*Hist. of Dent. Surg.*, Koch, p. 158), one chapter of which is devoted to filling or stopping teeth. He

says: "There is no subject connected with dental surgery of more importance than that of 'stopping.' There is none better deserving the attention of the student, nor is there any in which the dentist may more successfully display his professional skill. Were we to judge indeed from the almost innumerable cases of failure, which occur, we might conclude that the uncertainty of the operation was so great as essentially to diminish its utility and importance. These cases, however, generally occur under the management of ignorant persons, who are alike incompetent to the mechanical and the surgical part of the operation, and who are equally incapable of choosing the proper time for its performance." "In stopping teeth it should always be remembered that there is no medium between complete success and the total want of it. If disease is not perfectly eradicated, the operation is, in point of fact, a failure. It is but procrastinating a little the destruction of the infected tooth." As to filling materials, he says: "Amongst the numberless things which have been proposed for stopping teeth, there is only one perfectly suitable, and that is gold, but as the public has been given to understand that there are newly invented cements capable of effecting all that is desirable in curing toothache, plugging up carious cavities, and permanently stopping the progress of the disease, and one advertising practitioner has gone so far as to promise to re-enamel the teeth with cement, it will be proper to make a few remarks on the subject." These remarks will appear under cements.

The writer considered cements only as a source of revenue to the dentist and was very much opposed to their use, except to relieve pain, although that was only a means to put off the evil day of extraction, which was inevitable. It was only a fad which would soon pass away.

His filling instrument consisted of a very few simple excavators, a straight chisel, a straight instrument with a rough file end to be rotated as a drill and a few instruments with serated ends for packing and condensing the gold. The gold was non-cohesive and was introduced into the cavity in the form of a rope, which would more than fill the cavity. His cavity preparation consisted in oval or cylindrical cavities so far as possible with a flat bottom and the diameter at the bottom no greater than at the orifice. There was no pulp treatment at this time of any value and consequently the filling of carious teeth was limited to those having line pulps.

GOLD.

In the History of Dental Surgery by Koch (p. 168) is a reference to the History of Dental and Oral Science in America "in which is the first record of the manufacture or preparation of gold foil for dental use. It was first used in leaf, prepared by gold beaters and next was rolled. However, there was no especially manufactured gold at this time for dental use and every dentist was compelled to prepare his own gold in the following way: A gold coin (preferable the Brazilian "Johannes," Portuguese), the purest gold money then made, was rolled and beaten for use to thickness of 10-20 gr. per leaf. About the year 1812-13, Marcus Bull began the gold-beating business in Hartford, Conn., and Charles Abbey became his apprentice. He says (2) that dentists would borrow his rolls to roll out their 'old Joes' (Johannes). Mr. Bull, arriving at somewhat of a knowledge of dental wants, gradually brought these customers to use his partially beaten gold leaf, taking their Johannes in exchange. (In 1816, Mr. Bull moved his establishment to Philadelphia, where in 1835, Abbey became his partner and upon the retirement of Bull, in 1839, took the business himself. The house relinquished the gold leaf department in 1835, making dental foil its sole specialty. This was the first house in the country to be specially engaged in the manufacture of dental foil and has therefore been thus mentioned." The thickness of the gold made it impossible to make a good filling without the use of very great force. The foil leaf was then reduced from 10-20 gr. per leaf to as low as 2 grs., but the average thickness was from 4-6 grs. It was used in the form of heavy pellets placed in the cavity and forced to place laterally, using small instruments first and following with larger ones. In 1840 many used it in the form of coil ribbons, which they made upon a winder. Then the sheets were twisted into a roll, making a rope which was much easier handled. In 1851 the gross annual amount of gold foil used in the United States was about 6,600 ounces, sold at an average of \$30 per ounce, or a total of \$198,000. (Am. J. of Dent. Science, 2nd series, Vol. 1, p. 228.) In 1846 Dr. C. T. Jackson, of Boston, had a tooth filled with sponge gold. He had previously discovered the process of the manufacture of this gold. It did not attract much attention until 1853, when Mr. A. J. Watt, of Utica, N. Y., patented the preparation. (*Dental Cosmos*, Vol. x, p. 131.) It was then greatly proclaimed as a great step in advance and a boon to the profession.

It was in 1855 that the greatest revolution in gold work came when Dr. Robert Arthur, of Baltimore, brought out the process of annealing gold and producing cohesive gold. The "stickiness" of gold had been considered as an undesirable quality and had caused the manufacturers much trouble to dispose of it when it was found this way, until Dr. Arthur's discovery. Cohesive gold became very popular at once and many teeth were saved with it which had been considered as beyond filling before, and the manufacturers sold great quantities of it.

The following resolution was adopted by the Western Dental Society in St. Louis, May 22, 1857, and printed in the Dental News Letter. (Vol. x, p. 282.) "Resolved, that to Dr. Arthur and to him alone the dental profession is under obligation for his liberality in laying before the profession the principle of using and welding together annealed gold, by the use of serrated pointed instruments and that this society desires to express their thanks to him for this, one of the real improvements in the mode of operating."

With the advent of crystal gold operative dentistry took a step in advance and when cohesive gold came another great impetus was given to the practice of dentistry, which was a great blessing to the profession as well as to the public.

TIN, LEAD AND SILVER.

Fauchard says in his writings on stopping teeth: "Fine tin is preferable to lead, for lead turns black much more easily and is much less desirable; both are preferable to gold because lighter and adapting themselves much better to the unevenness of the carious cavities. Besides, gold being dear, not every one can or will make the corresponding outlay." (1)

This quotation from the writings of one of the greatest, if not the greatest practitioner of dentistry of the 18th Century, gives the standing of the different metals for use in filling teeth at that time. John Hunter, another man of great distinction, preferred lead above all other materials for filling teeth. Pierre Dionis, of Paris, a contemporary of Fauchard, writes of silver leaf for stopping carious teeth, as if it had been in use for some time previous to this, but there is nothing in the literature earlier.

In the New York Dental Recorder, Vol. ix, p. 195, there is a record of tin in this country as early as 1822. It became more common by

1830 and was quite popular on account of the saving of time and labor. When amalgam became popular tin lost a great amount of its popularity. After the advent of cohesive gold, tin, in combination with gold in deep proximal cavities, was used quite extensively and only with the birth of the gold inlay did its popularity again wane.

CEMENT.

Cement, if such it may be called, was recommended as early as the 9th Century, as we find it in the writings of Rhazes. These cements were composed of mastic and alum. Snell (2) says in his writings of the early 19th Century: "The cements now in common use are principally of two kinds, mastic and metallic. The first is termed anodyne cement and is used for the cure of toothache, but is merely a vehicle to retain something else which is to act on the diseased part, except, indeed, we allow it some share of utility in keeping the air from the cavity. This effect, however, is, from the nature of the composition, very uncertain."

"Metallic cements are principally of two kinds. Those composed of a combination of metals, capable of fusion at a low heat—that of boiling water or lower—or those composed of granulated metal, either mixed up with amalgam or mercury or compounded with a gypsum. The latter are almost too worthless to be mentioned." (Hist. of Dent. Surg., Koch, p. 161.) Terro-metallic cement was a substance of lime and oxide of iron. It was of little value. Then came the fusible metal fillings among which were D'Arcets' mineral cement composed of bismuth, lead and tin and occasionally a little mercury to hasten the fusing. Its use began about 1820 (Natural History of the Diseases of the Teeth, 1833) and lasted only a few years. Wood's metal came in 1860 (*Dental Cosmos*, Vol. iv, p. 59). This metal was placed in the cavity in pieces and made plastic with hot instruments, while D'Arcets' was usually poured into the cavity in a melted or liquid condition. (Hist. of Dent. Surg., Koch, p. 174).

Metallic cements were the forerunners of amalgam and their use was of short duration only. Amalgam became popular and forced its way in, in spite of the prejudice against it and metallic cements were soon out of date. Oxychloride of zinc originated from an invention for stucco work by M. Sorel in 1856. It consisted in a coating of oxide overlaid with a coating of chloride of zinc. (*Dental Cos-*

mos, Vol. iv, p. 358). Sorel suggested its use for "stopping hollow teeth" and it became called Sorel cement. Its use was very limited and was soon followed by other combinations. In the seventies oxyphosphate cements came and in 1892 Dr. W. V. B. Ames brought out a "new oxyphosphate for crown setting" which was composed of black oxide of copper and phosphoric acid. (*Cosmos*, Vol. 34, p. 392). These cements are of such recent production and still in such common use that there is no need of further description at this time. The use of soft cements for lining cavities before inserting metallic filling was advocated as early as 1885 (*Cosmos*, Vol. 28, p. 762) by Dr. Reese at a meeting of the First District Dental Society of New York. In the discussion Dr. C. S. Baldwin said: "I tried all those experiments and I found, as I believe most of you will find, that there is nothing quite so good to hold gold fillings as good, solid tooth material." (2) (p. 187.) However, there has been a considerable amount of discussion along this line ever since.

GUTTA PERCHA.

(A paper in which any attempt were made to go over the field of operative dentistry would by no means be complete without some mention of gutta percha. It has a usefulness differing from all other substances for filling materials, and occupies a position in which there is no available substitute of equal merit. Its usefulness as a temporary filling, a permanent filling of root canals and other uses gives it the right of our attention.) Gutta percha was introduced in 1847 as a temporary stopping. (*Cosmos*, Vol. viii, p. 658.) (2) Hill's stopping came in 1848 and was patented in '49. It was composed of gutta percha, quick lime, powdered quartz and feldspar. It was used about the same as we are using it today. It was very much more expensive than any other, being about twice as much per ounce as baseplate was per pound. In 1857 it was recommended by C. Gibson Lum, of Vicksburg, Miss., to protect the pulp in deep-seated cavities from arsenic when used to remove sensitiveness of the dentin. (*News Letter*, Jan., 1857.) It was soon learned, however, that this could not be done successfully. In the sixties it became used as a permanent filling for root canals.

AMALGAM.

The use of amalgam dates back before the time of dental mag-

azines, and it seems that the writers of books did not consider its use of enough importance or value to mention it. It was used by charlatans and was introduced into this country by men of questionable character professionally.

About 1826 M. Traveau, of Paris, recommended a "silver paste" for filling teeth and about 1833 the Crawcour brothers introduced into this country what later became called amalgam. Until the first dental magazines were published in 1839 the history of this filling material was handed down by the older men.

It was first made by "filing silver coins and rubbing these with mercury. It was very difficult to amalgamate, made a very harsh mass, and hardened very slowly, but finally became very hard." (4) (Vol. 11, p. 299.) This filling was little better than nothing and yet enough teeth were saved with it for a sufficient length of time to attract the attention of some of the better men. "The first decisive improvement was made by adding tin to the silver and breaking up the tin foil by rubbing it with the silver filings. This caused it to amalgamate much easier, formed a much more plastic mass and this mass hardened much quicker." (4) (Vol. 11, p. 300.) This led to the making of an alloy of silver and tin which was a great improvement and gave its use a great impetus.

In Europe about the same condition existed. Amalgam was decidedly in disrepute because it was used so freely by all sorts of quacks and charlatans. However, much scientific work was going on both there and in our own country. It was kept out of the schools and many of the prominent men bitterly opposed its use. "Dr. McKellops, of St. Louis, never made an amalgam filling in his life and could not say enough against it." Dr. Taft, for many years dean of the Ohio College of Dental Surgery and later dean of the dental department of the University of Michigan, would not allow amalgam used in these schools.

Dr. Thomas Hitchcock, of New York, did a great deal of valuable scientific work on amalgam which was published after his death by Dr. E. A. Bogue in 1874. (Transactions of the N. Y. Odontographic Society, 1874.) These experiments were principally to find the shrinkage and expansion in the process of hardening. He used a micrometer of his own make which registered 1/1000 inches and used a steel trough an inch long to make the fillings in for experiment work. Had he lived a few years longer he might have come to some

conclusions which would have put amalgam on a better basis at a much earlier date. John Tomes, of London, in 1861 (*Trans. of the Odontological Soc. of Great Britain*, Vol. 3), by the use of a microscope over many fillings found shrinkage in most all of them. Charles Tomes, in 1871, by the specific gravity test also proved that there was shrinkage in most amalgams.

These three men at different times proved by different ways that there was shrinkage of amalgam, one by the microscope, another by specific gravity and the third by the steel trough and the micrometer. However, nothing definite was arrived at. Dr. J. Foster Flagg wrote a great deal about amalgam, and there were many others, yet in spite of all the literature in opposition to it and all the investigation regarding its shrinkage, its use went on just the same and the reports of the experiments were dropped without any remedy or progress.

It was not until Dr. G. V. Black began to consider this subject with the determination of accomplishing something definite that the problem was solved. He began in 1895 a series of systematic and progressive experiments which led to the solving of it. Dr. Black says, to quote: "A surprising phase of this experimental work, considering its great importance, had been the failure to follow any well defined plan of work, calculated to develop an accurate knowledge of the physical characters of the various metals employed in making amalgam. Silver alone used for amalgamation had been shown to expand and this had been corroborated by a number of different men. Silver and tin amalgams had been shown to contract by as many, but these latter were alloys of nearly equal parts of the two metals in every instance. No definite line of experiment had been tried such as making and testing a progressive line of silver-tin alloys running from a low to a high percentage of silver, that would give a view of the properties developed by the possible variations of the proportions of these metals." (*Op. Dent.*, Vol. 11, p. 300.)

Dr. Black was convinced that the ivory blocks and natural teeth used previously for experiments would not give accurate results unless subjected to the same conditions as found in the mouth. He also saw that the investigation should be made in 1/10000 in. measurements. As there was no such micrometer in existence, he first went about it to make one. The next step was to get a binocular microscope to corroborate the readings of the micrometer. He found out from the manufacturers the formulae being used and also procured

ingots of their alloy for study. He found out that "a mixture of metals is not an alloy and has not the effect of an alloy in amalgam making."

By series of experiments he found that an alloy in the proportion of about 65 silver and 35 tin when freshly cut would make a stable amalgam, which would neither shrink nor expand.

"In making alloys Dr. Black finally used the closed electric crucible and melted and mixed in hydrogen. (2) (p. 179.) In cylindrical steel blocks he drilled cavities $\frac{5}{8}$ in. in diameter and of uniform depth and packed his test fillings and placed a steel dish on the surface for the needle to rest upon. He found that fresh cut filings required more mercury, were harsher to work, hardened more quickly and would shrink less or expand more than if the filings had been standing for some time at ordinary temperature. Ageing or annealing is greatly hastened by heat. The cutting machine when run rapidly would generate enough heat to anneal sufficiently at times. When filings were kept as cold as 17° F. there was no annealing. So after annealing the proportion to make a stable alloy was found to be about $72\frac{1}{2}^S$.— $27\frac{1}{2}^T$. More silver would make it expand and more tin would make it contract. Forty per cent silver and 60 tin would make amalgam that would shrink enough to drop out of the tube. The amount of mercury had little to do with expansion or contraction. He also determined that the "flow" must be considered. This is the property of tin to spread out or get away from continuous, steady pressure without breaking. "Amalgam that flows under a pressure of 50 pounds is unfit for fillings on occlusal surfaces on that account, aside from the accompanying shrinkage in such over tinned alloys."

Many of the manufacturers sent representatives to Dr. Black to get instruction in the scientific principles regarding the making of an alloy that would not shrink nor expand, and the result is that we are now furnished with a number of good amalgam alloys.

Dr. Black gives two fundamental principles:

"1. Shrinkage and expansion of the amalgam used is not under the control of manipulation by the operator.

2. The strength of amalgam is directly under control of manipulation, within its possible limits."

INLAYS.

Porcelain inlays originated in bits of porcelain ground from arti-

ficial teeth to fit the cavity and set into the cavity with gold foil or amalgam, or even mastic, and later oxychloride of zinc. A number of articles appeared in the 70's and 80's regarding this method of filling teeth. Among them is one by Dr. W. Storer Howe, of Philadelphia, which appeared in 1888 in the *Cosmos* (2) (Vol. xxx, pp. 542-47). He mentions the name of Dr. B. Wood as the first to use inlays of this kind in this country (*Cosmos*, 1862), and Dr. George Moffatt (*Cosmos*, July, 1869). The "*News Letter*" for January, 1858 (2) gives record of Dr. A. J. Volk describing this method previous to the issue by at least a year. He ground the piece of porcelain so that it was well adapted to the cavity and then wrapped it in gold foil, and placing it in the cavity, packed the loose ends of the gold in the crevice about the inlay. (*American Journal of Dental Science*, July, 1857.) (2)

At the Odontological Society in February, 1877, Dr. E. A. Bogue describes his method of grinding pieces of porcelain for labial cavities and pressing them to place in gum mastic with a hot iron. Dr. Hawes at the same meeting advocated setting them with oxychloride cement. (*Cosmos*, Vol. xix, pp. 349-50.) (2)

In 1889 a paper on "Glass as a Filling Material," written by Dr. Wilhelm Herbst, of Bremen, Germany, was read by Dr. George L. Curtis, of Syracuse, N. Y., before the American Dental Society. "Two kinds of glass are necessary, milk glass from a broken lamp globe and brown glass." An impression and model was made and the glass mixed to approximate the color of the tooth packed into the model and fused over a bunsen burner. This process was repeated until the inlay was completed and a satisfactory likeness to the tooth was obtained. This method was introduced in this country by Dr. Herbst about three years prior to this date in New York. (*Cosmos*, Vol. xxxiii, pp. 808-51.) (2)

Porcelain work developed more rapidly in Europe than in America. High fusing body had been used in making artificial teeth for many years and the "close" body and enamel had been used for continuous gum work.

The method of burnishing the matrix of gold or platinum into the cavity and fusing porcelain in the matrix was introduced soon after the Herbst method of making glass inlays came. Dr. N. S. Jenkins, of Dresden, had been doing a great deal of porcelain work and experimenting with it for many years. In 1898 his method of

using low fusing porcelain was demonstrated in New York by Dr. Darby. (*Cosmos*, Vol. xl, p. 360.) (2) Later the same year Dr. Jenkins gave out the result of five years' experiments with porcelain enamel. (*Cosmos*, August, 1908.) (2) His work gave quite an impetus to porcelain and it became quite popular as many men of to-day may remember. However, as the years went by it became limited to a more conservative use where it is especially indicated. Some of the men (2) whose names are associated with porcelain are Dr. Joseph Head, of Philadelphia; Dr. Capon, of Toronto; Dr. Ottolengui, of New York, and Dr. W. T. Reeves, of Chicago. Many others might be added to this list for their work both in practice and writing. The early development of the gold inlay is within the memory of most of the older men of the profession and its common use can be placed within the memory of most any of us.

In 1876 Dr. B. J. Bing, of Paris, demonstrated his method of making gold inlays at the Pennsylvania State Dental Society. His method was to fill the cavity with Hill's stopping and then press into it a plate of pure gold with loops of gold or platinum soldered on the under surface to be imbedded in the stopping. (*Cosmos*, Vol. xviii, p. 486.) (2) Another early method of making gold inlays and one which nearly resembles our recent method of making hollow inlays, Prof. Charles Essig applied Dr. Bing's principle with a few additions. In large compound cavities he describes making a model in wax to restore the contour, then taking an impression and making a model. A die and counter die was made from the wax and a cover of pure gold swaged and with loops soldered to the under surface it was ready to press into the warm gutta percha or Hill's stopping packed in the cavity. By the bite the patient corrected the occlusion and the margins were burnished at once. (*Cosmos*, Vol. xix, p. 314, March, 1877.) Dr. J. A. Swasey was one of the early gold inlay workers. In 1890 (*Cosmos*, Vol. xxxii, p. 884) he described his method of making gold inlays. He took an impression of the cavity in modeling compound impression and made a model or burnished a piece of gold No. 120, directly in the cavity and then invested this and melted gold into it. Dr. W. V.-B. Ames also made gold inlays during the 80's and quite a number of others were taking up this method of filling teeth.

During the 90's and the first few years of the 19th Century gold inlay work progressed to quite an extent, although only a small per

cent of the profession used the method. It was not until 1906, when Dr. W. H. Taggart introduced the method of casting gold into a mold of the cavity made from a wax model, that inlay work became a general practice. Dr. Taggart had long been identified in gold inlay work and with this new process of his invention he gave to operative dentistry its greatest gift since the day when Robert Arthur gave it cohesive gold. Volumes have been written on this subject and the tribute of thousands in our profession has been paid to this man who not only revolutionized operative dentistry, but prosthetic dentistry as well.

PULP TREATMENT.

Cauterization of the dental pulp dates back many centuries B. C. In the papyrus of Ebers, which dates back to 3700 B. C., cauterization is spoken of for relieving pain in the teeth. From this time on until the middle of the 19th Century, A. D., the cautery was in common use for exposed and aching pulps. Josiah Foster Flagg (2) in 1832 writes of exposed pulps and recommends oil of cloves or oil of cajeput and says: "They are also sometimes destroyed by the dentist—by the use of strong mineral acids, or by instruments designed for the purpose."

In the DENTAL REVIEW (July, 1912) Dr. J. E. Hinkins of Chicago has given the history of arsenic in dentistry. He says: "Darby tells us that the Chinese 2700 B. C. used a compound with arsenic in the form of a pellet and placed it in the cavities of painful teeth."

"In the 10th Century Johannes Mesue, an Arabian, used a mixture of yellow arsenic formed into a mass with which they anointed the roots of teeth to facilitate the extraction of them." "About 1400 Petrus De Larglata treated dental fistula and dental cavities with caustic and arsenic. Fifty years later Arculanus wrote of filling teeth with gold and recommended arsenic as an obtundent."

Nothing more is written about arsenic in dentistry until John R. Spooner, of Montreal, in 1835 advocated its use for devitalizing the tooth pulp. It is claimed that Drs. Alexander Wood, of Edinburg, and Chapin A. Harris, of Baltimore, were using arsenic for devitalizing the tooth pulp about the same time.

Dr. Harris in 1839 (*The Dental Art; a Practical Treatise on Dental Surgery*, from *Hist. of Dent. Surg.*, Koch, p. 210) recommended the "application of leeches to the gum and soothing and

astringent applications to the cavity" and says that "arsenic being a deadly poison will never be used universally for pulp destruction."

There was a practice of "knocking out" pulps in use about the middle of the last century. A slender pointed piece of hickory or orange wood saturated in creosote was driven into the root canal, and the pulp removed with the stick. Sometimes the stick was used as a permanent filling for the root, Dr. G. A. Mills used this method. (*Cosmos*, Vol. xxv, pp. 447-48, 1883.) Dr. Kennicott, of Chicago, in the *News Letter* (Vol. x, pp. 4-5) speaks of this method as early as 1856 (2) (p. 210.)

Cocain was first introduced by a physician, Dr. Carl Koller, of Vienna, in 1884. It was taken up by the dental profession very soon after and its use for anaesthesia for pulp removal dates from some time just previous to the 90's. In the "*Cosmos*" (Vol. xxxiv, p. 992, 1892) (2) a paper on the "Removal of the Tooth Pulp by the Use of Cocain" was written by Dr. Edward Briggs in which the writer describes removing live pulps by forcing a 20 per cent solution of cocain into the tooth pulp with a syringe. He also states that he had demonstrated this operation two years previous in 1890 at Boston. Since this time many men have written on the use of cocain. It has become as popular with many operators as arsenic for pulp removal.

Pulp capping (2) was advocated in the early part of the 19th Century. D. C. Ambler was one of the practitioners to advocate this treatment in 1827 and Koecker has described it in his work in 1826. The pulp was cauterized with a cautery and covered with a lead disk and then covered with the filling. Dr. Harris arched the filling over the exposure without any metal disk. Gutta percha and Hill's stopping were also used for this purpose.

Dr. Arthur Black in the *Summary*, 1908, p. 428, has given a brief history of alveolar abscess. He says that "Fauchard (1783) speaks of an alveolar abscess as being connected with a tooth and that it disappears with the extraction of the tooth, but he makes no mention of the pulp of the tooth, evidently not having discovered the actual cause of the condition."

"In the *Am. Journal of Dent. Science*, 1839-50, I find alveolar abscess mentioned only about one-half dozen times, and then only to report cases in which pus took some unusual course. In every case the treatment mentioned was the extraction of the teeth involved,

there evidently being no thought of the possibility of saving them. In fact, until the 60's it was the very common practice to also extract teeth with living pulps that had been exposed by caries."

An operation originating with Dr. S. P. Hullihen, of Wheeling, W. Va., consisted of "making a hole through the gum, the outer edge of the alveolar process and the root of the tooth, into the nerve cavity and then in opening the blood vessels of the nerve." This was known as Risodontryphy, and it was claimed that pulps exposed by caries could be filled over and remain alive. Dr. Black expresses his opinion that the practice of drilling "vent holes" and leaving them open originated in this operation.

Dr. C. W. Ballard in 1835 used creosote for treating this condition. Dr. Homer Judd, of St. Louis, who was the leading man of the West in his time, in 1869 wrote many articles of value on this subject and showed that he was "trying every possible method of saving teeth in the most desperate cases at a time, when the profession as a whole, had hardly begun to even think of attempting to save abscessed teeth in the most favorable cases." He was at that date excising the ends of denuded roots in his practice, and doing many other things much in advance of his contemporaries. There are many who have contributed to the development of the treatment of this condition, and among them are Dr. Emil Schreier, of Vienna; Dr. J. S. Cassidy, of Covington, Ky.; Dr. G. V. Black and Dr. J. P. Buckley. Dr. Buckley's work on pulp decomposition and its treatment is very extensive and one of the most valuable contributions to dental literature. His treatment has become known universally and by its means many teeth have been saved which had been considered hopeless by most practitioners. It has reduced the seriousness of this condition to such an extent that the prognosis is almost always favorable.

ROOT FILLING.

Root canals have been filled in various ways and with various materials from the beginning of this work and we find the same condition existing today. Such as orange wood and hickory sticks saturated in creosote were used by some in the 50's and also cotton saturated in creosote. A case is reported in the *Cosmos* (1861, p. 556) (2) in which Dr. Hudson, of Philadelphia, had filled the root canals of the upper centrals with gold about 1830 and they were in perfect condition at the time of the report, a period of thirty years.

Dr. J. S. Clark, of New Orleans (*News Letter*, Vol. x, p. 4, 1856), (2), claims to have filled canals for eight or nine years previous to 1856 with gold, and says that it had been done years before by Maynard, Hardwood, Barjer and Hudson. Gutta percha was used as a filling for root canals previous to 1865 (2). Baseplate gutta percha was heated over a lamp in a small evaporating dish until soft enough to work, and carried to place with a hot instrument. Hill's stopping dissolved in "volatile eucalypti extract" was used, being worked into the canal with warm instruments. Dr. J. Foster Flagg (*Cosmos*, October, 1859) (2) used cotton saturated with creosote at the apical part of the root and gold or amalgam was placed over this. His father had advocated this method of root filling since 1850 and had used it nine years previous.

Some attention was given the possibility of leaving part of the pulp in the canals without causing trouble. Articles appeared on mummifying the pulp in later years. Dr. W. D. Miller, of Berlin, in 1893 (*Cosmos*, Vol. xxxv, pp. 803-6) (2) read a paper on "Concerning Methods Advocated for Obviating the Necessity of Extracting Devitalized Tooth Pulp." He says that Wetzell was the first to use this practice in 1874.

Many others have written on this subject, but the practice never became universal, although it served a worthy purpose in assisting in cases where the difficulty of access proved too great to insure thorough cleaning of the canals. A paper by Dr. A. W. Harlan, of Chicago, on "Pulp-Digestion" was read before the International Dental Congress at Paris in 1900 (*Cosmos*, Vol. xlii, p. 1272) (2) in which he advocated the use of papain for the inaccessible canals. Dr. J. R. Callahan, of Cincinnati, advocated the use of a twenty to fifty per cent aqueous solution of sulphuric acid to clean and enlarge canals in 1894. (*Cosmos*, Vol. xxxvi, p. 329.) (2)

"Immediate root filling" was advocated and practiced by Dr. Smith Dodge, Jr., M. D., D. D. S., of New York, as early as 1856 (*Cosmos*, 1887, p. 234) (2). Dr. Edmund Kells, Jr., of New Orleans, commended this article and recommended the same practice the same year. (*Cosmos*, 1887, pp. 366-67.) (2)

In September, 1906 (*REVIEW*, Vol. xxi p. 34), nearly twenty years later, Kells appeared at a meeting of the Chicago Dental Society and again recommended the same practice after these years of experience. Other operators have advocated tin, amalgam, cement

and sandarac varnish for canal fillings, and a recent article has appeared on filling canals with an "improved paraffin compound." (*Cosmos*, October, 1912.)

DEVELOPMENTS OF LATER YEARS.

In 1908 Dr. G. V. Black published a text-book on operative dentistry in which he has devoted a considerable space to the condition leading up to and attending the causes of caries with the management and treatment of it. This work was preceded by a number of articles by Dr. Black, which appeared in the dental journals beginning in 1891 in the *Cosmos* on "The Management of Enamel Margins" and another series beginning in the *Cosmos* of 1895 (Vol. xxxvii, p. 353) on "An Investigation of the Physical Character of the Human Teeth in Relation to Their Diseases, and to Practical Dental Operations, Together with the Physical Character of Filling Materials."

Other articles also are to be found along the same line of thought. Among them are Dr. Safford G. Perry's article on "Management of Proximate Surfaces of Bicuspids and Molars" (*Cosmos*, Vol. xxi, p. 242, 1879) (2) in which the principle of extention for prevention is considered. Marshall H. Webb (*Cosmos*, Vol. xxiii, p. 593, 1881) (2) has written on "Restoration of Contours and Prevention of Extention of Decay."

The question of extention for prevention is by no means a recent one, although the practice of it before the 90's was not general nor was there any accepted reason to justify such a practice. Dr. Black's articles along this line were based on such sound reasoning and his arguments so forceful that there was no opposition to his work, and it was readily accepted. Men who had practiced this extending of cavities beyond the regions of decay were able to see a scientific reason for such practice. However, there is so much involved in this principle that even today it probably is not clearly understood and carried out by us in many cases as it is advocated. The difference between "extention for prevention" and extending the walls of cavities already undermined by decay with reference to the recurrent decay, is one of the more recent lines of thought in this field. How many times have we found that the enamel on the proximal surface has been undermined and the dentin decalcified by the ravages of decay and we have cut away the enamel freely, thinking how we were carrying out these principles, when really we were only

removing already decayed structure and not extending to prevent decay.

The developments in regard to the deposits on the teeth are of great interest and scientific value. From Hippocrates to the present generation this subject has received a great deal of attention, and yet the field is not fully explored. Dr. G. V. Black's most recent work has been upon this subject. In the *Items of Interest* (Vol. xxxiii, p. 420, June, 1911) a paper on "The Beginnings of Pyorrhea Alveolaris"—"Treatment for Prevention," which was read by Dr. Black at the Second District Dental Society of Brooklyn in January, 1911, gives much of the recent research work by the author. Another may be found in the *DENTAL REVIEW* (Vol. xxvi, p. 337, April, 1912), which was read before the Chicago Dental Society in January, 1912, on Salivary Calculus. The treatment of this subject is far too vast to give a review of it here. One striking point in the paper is the statement that a deposit of agglutinin precedes the lodgment of tartar, and if this can be prevented the teeth can be kept free from tartar.

In regard to the connection between the deposits in the mouth and the general systemic condition, Dr. Black refers to an article by Dr. Arthur E. Elliott, of Chicago, entitled "Euglobulin Reaction in Urine." (*Ill. Med. Journal*, November, 1911, p. 520.) He closes his discussion with these remarks: "If the physician could command the time to learn to distinguish readily the paroxysms of the deposits in the mouth, he would probably find a coincidence between this and the innocent albuminurias, and that each is an expression of the same systemic condition. It is possible that the careful comparative study of the saliva and urine may lead to clearer definitions, and simplify the means of division of the grave and innocent albuminurias."

"But are these repeated paroxysms of elimination of globulins innocent of injury to health? May they not have a causative relation to some grave conditions, or a harmful relation to more or less grave conditions now not fully understood? It opens up a very wide field for question and investigation."

"The examination of the saliva and other secretions, in conjunction with the urine, seems to be demanded." The connection between the general systemic condition and the condition of the secretions of the mouth and the beginnings of the disturbances found in the mouth, both of the soft tissue, gingival border, and the hard tissue of the teeth themselves is being very seriously considered.

Arthur D. Black is doing some interesting investigation along the line of the beginnings of periodontal disturbances. In the *DENTAL REVIEW* (Vol. 26, p. 861), under the title of "Preventive Treatment of Periodontal Disease," is a paper which he read before the Chicago Dental Society in April, based on observations from 376 different cases showing the condition found and causes for the condition. His conclusion is that instead of more specialists to treat pyorrhea, we need "more dentists who will make it their specialty to prevent disease of the tissue involved."

As we review the past few years nothing stands out more prominently than the campaign against unsanitary conditions existing in the mouth. Never in history has the attention of the profession been directed upon anything which is so beneficial to the public welfare and health of the community as oral hygiene. The public awakening in this work is tremendous and opens for the future such possibilities as have never been known in dentistry. The recognition by the municipal authorities of the need of dental examination in the public schools, the creation of the office of a municipal dentist, and the establishment of dental infirmaries for poor children of the city are developments that suggest the great possibilities of the future.

Gentlemen, the most prominent thing that the history of operative dentistry brings to my mind as I have labored on this paper in a very humble way, is the wonderful opportunity before us today. The vast field just opening up before us in both science and practice, has never been even dreamed of before. Along with this there is evidence on every side of us of the great public demand for the most skilled and scientific services we are able to render.

I am especially indebted to Dr. Edmond Noyes for his article on "Operative Dentistry," in the *History of Dental Surgery*, by Koch.

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ORTHODONTIA FOR THE BUSY DENTIST*

BY DR. H. J. MOORE, FRANKFURT, A. M.

For some years past the subject of orthodontia has disappeared from our list of papers. Were we all so fortunate as to be so far advanced in this work as the specialists in this branch; or to live in towns where we could send our patients to such colleagues, the gap might be filled by our joining an orthodontic society, or by our taking no interest in the subject, beyond remembering that an Angle graduate was located in the town and was a very good fellow.

But Angle graduates have not penetrated as far as American dentists have, and so many of us have to do our own work for our patients and perhaps for our own children. This being the case I make no apology for bringing this subject again before you.

We all acknowledge with deep gratitude the wonderful help that Dr. Angle's writings have been to us. They simplified our diagnosis immensely, taught us the supreme value of a right occlusion and showed us how to correct that most common irregularity, mesio-distal occlusion by the Baker anchorage. They also taught us that the first thing to do was not to extract teeth, as we had formerly learned, but that, in most cases, room could be made for all by expansion. Of Dr. Angle's classification I am not going to speak. Personally I never know in what class this or that case is, and except for scientific papers I don't think it matters. I have also another confession to make and it is this, that having tried for some years the expansion bar and wire ligatures, I decided they were not easy enough for me, and were too liable to cause decay in the teeth of patients who were lazy in the use of their tooth-brush.

So I started experimenting with the Jackson system and I should like to give you a few of my experiences with this and to show you a few results. I have no pretty models to show you; they were all taken in the rush of a very busy practice and mostly with modelling compound, as children hate plaster even more than grown-up people, and where it is not absolutely necessary I do not use it, and never until I have the child's confidence.

*Read before the American Dental Society of Europe.

If you have been even casual readers of your dental journals you will very likely know something about Dr. Jackson's system. His appliances are removable ones, consisting of cribs, that hold the machine to the anchor teeth, a strong base wire of nickel silver and other springy wires for moving the teeth, the several parts being soldered together with pure tin by means of a soldering iron.

In his book Dr. Jackson tells you how to make the crib that holds on to the anchor teeth. The wire is supposed to slip over the bulbous part of the tooth, down by the gum and to hold fast there. This is all very well with long teeth but an impossibility with short ones. After many trials and experiments I decided to cap the anchor teeth with a cap of thin nickel silver, with a pure gold top burnished well down, and on the buccal side to place a lug over which the wire of the crib would spring, and then be held fast. In this way it is impossible to remove the appliance from the mouth with the fingers, an instrument being necessary to spring it off. After I had been using this about a year, I noticed that Dr. Jackson had evidently been up against the same trouble, as he wrote an article in the *Cosmos* describing such a crown. Now I think this crown is the one thing that makes work with the Jackson system easy. When you have cemented these on to your anchor teeth and at the next visit adjusted your appliance, you know it is there to stay, as it is not easy for your patient to remove it.

To give you the different steps in the making of an appliance I would say that first a model is taken of both jaws and of course studied to see what is necessary to be done. Then you must decide which teeth you will use as anchor teeth, bicuspidis or molars, and the crowns can be made for them on the models taken. At the next visit the crowns are tried on in the mouth and a model taken with them in place. The crowns are then taken off, put in the impression and cast, and the appliance is made on that model. At the next visit the crowns are cemented on to the teeth in the mouth and at the following visit the appliance is sprung into place and expansion started or any other force exerted that is required.

Expansion of the arch is very easy to accomplish, widening the front part of the arch or the molars separately is also easy, but having called your attention to this system, I do not need to tell you further of these everyday cases. If you are interested, you can

get Dr. Jackson's book, and at a glance, at some of his illustrations, see how he hoists teeth, and accomplishes the other movements necessary to the completion of any individual case.

I would now like to show you two or three sets of models.

The first is of a patient 35 years of age, with a very over-developed anterior portion of the upper jaw. She had been told by seven dentists that they could not help her. I did not promise her great things but I told her I thought I could improve her appearance, still, as I did not expect to be able to get the mouth perfect, and, as we had started this so late in life, I thought she would have to always wear a retaining plate at nights. She consented to this. The treatment of the case was made the more difficult in that she did not want to wear the machine on the street but only when she was alone and at nights. As you can see I cribbed the first molars and first bicuspid and brought two strong gold and platinum wires against the front of the incisor teeth which exerted pressure against them and drove them backwards. The lower incisors were pressed forwards and were also shortened a little by grinding. The lower plate was worn all the time being sprung over crowns on the bicuspid, and as it was working on the inside of the teeth it was not seen. The upper plate was removable the teeth being long and needing no crowns and so it was taken out and replaced at will. In about eight months the spaces disappeared between the teeth and the appearance was greatly improved. Further improvement could have been accomplished but the patient was satisfied and shortly after married and moved to another town.

Case 2 is that of my son aged 15. Mesio-distal occlusion on the left side and the upper right bicuspid region not quite as it should be. The correction of this case had been postponed for various reasons. The right upper second bicuspid was pushed into line and retained there. Then I had an idea that if I crowned the lower left first molar and the first bicuspid and connected them together with a thin wire, labially and lingually, the three teeth would move as one and avoid that crowding of the bicuspid that you so often get with the Angle appliance when you are employing rubber bands. On the molar crown I soldered a hook. I then crowned the two upper cuspids, ran a gold wire in front of the upper incisors which was soldered to the two cuspid crowns. The

left upper cuspid crown carried also a small hook for the rubber band. All the crowns were cemented into place and at the next visit a rubber band was placed in position. Shortly after this the boy had an attack of hay fever and within a week we had to send him over to England as he got rapidly worse with asthma. While in England he changed the rubber bands himself and on his return within three months the irregularity was corrected, having received no professional attention. The appliances were removed and the teeth watched, but no retaining plate was found necessary. I had the last models taken last week, seven months after the case was finished, to show you how the teeth have settled down.

Case 3 is a typical case of mesio-distal occlusion. The boy is 12 years old. Had been operated on for adenoids when quite young, but still spoke nasally. The upper and lower jaws were expanded with marked improvement in the voice. To bring the jaws into proper occlusion the upper cuspids were crowned and connected together as in the last case and provided with a hook on each crown. The lower cuspids were crowned and joined by a wire running at the back of the lower incisors, so that when the cuspids moved forward the incisors had to go too.

From the labial face of the lower cuspid crowns a strong oval wire extended back, following the curves of the lower jaw to the middle of the first molars and at the end of the wires a hook was soldered for the attachment of the rubber bands. This arrangement pits the lower front teeth against the whole upper arch, resulting in my hands in a much quicker movement, as I always find the most difficult teeth to move forward are the lower cuspids, owing to their long roots. I had decided to move the molars and bicuspids after room had been made. This machine was cemented into place and worn for about three months, sometimes with one rubber on each side, sometimes with two, and required hardly any professional attention. The lower incisors and cuspids moved forward and the bicuspids and molars seemed to follow suit of their own accord. As this case is only just finished I cannot tell you whether it will be necessary to use a retaining plate, but I hope not, although I may find it is, as the cusps of the teeth are very short and do not interlock well.

One or two words in conclusion. In the front of the mouth use only gold for wires and bands, as often nickel silver stains the teeth. You can use gold for molar crowns if you want to.

In moving incisors and cuspids forward put a band on the tooth with a small lug lingually to keep the gold platinum wire down at the neck as otherwise it will rest on the incline surface of the teeth and you will get little movement. Do not spring the wires out too much. You get an enormous constant force by this method and you must not work too quickly. Your patients will tell you how far you may go, they rarely or never complain about the machines, the only fault they find is that the machines are often invisible and so they cannot flash them at their classmates. In mesio-distal work I have fortunately found I can give them a plentiful display of gold and so they are happy.

And now to justify the title of my paper "Orthodontia for the busy dentist," I would say that although the first adjustment of these appliances may take as much time as the Expansion Bar, the subsequent visits are generally of only five minutes as the removing, cleaning and re-adjusting are very easily done.

ELTNER'S ANATOMICAL ARTICULAR AND THE INCLINED PLANE ON FULL DENTURES.*

BY DR. O. SOLBRIG, PARIS.

When our honourable secretary asked me to put my name down for a demonstration for Monday next, he expressed the wish that I should read a few lines in explanation of the practical demonstration.

I shall not enter into a theoretical consideration of anatomical articulation, but consider it only from one point of view; that is—how to measure the individual movements of the jaw and how to transfer them to the articulator in view of prosthetic work.

I am, therefore, trying to keep to the point, and to be as brief as possible.

The question of temporo-maxillary articulation is by no means a new one. Since the time of Dr. Bonwill, pioneer in this study, many eminent men of nearly every country have contributed to the working out of this most interesting and complex question.

In America, we find a long list of names which are all well-known to you like Drs. Bonwill, Gritman, Snow, Walker, Moly-

*Read before the American Dental Society of Europe.

neaux, Perry, and many others. We have the great privilege to count amongst our members two of the earliest writers after Dr. Bonwill, who have given the question an extensive study.

One is Dr. I. B. Davenport, who published in 1887 a most conscientious and concise article on the articulation of natural teeth, and the other is Dr. C. E. Luce, who, in 1889, published a series of studies of the movements of the temporo-maxillary articulation.

In Denmark we find Dr. Christensen; in Germany, Drs. Schwarze, Hess and others; in France, we have amongst others, Dr. Amoëdo, who, at different times, has given most interesting communications at various Congresses and before all the French Dental Societies and is no doubt the most enthusiastic promoter of Anatomical Articulation in France.

Switzerland has given us two eminent writers on this problem. One is Dr. Gysi, who gave us an interesting study in February, 1895, and has since published a series of articles which mark a decided progress, I might call it a new period, in regard to this question.

I leave to the last the name of Dr. Eltner, of Bale, who is one of the most recent writers on this subject and I shall have the pleasure of setting before you a part of the result of his research.

Nearly all the authors have found that the ordinary Hinge articulator was insufficient to reproduce all the movements of the human jaw, and they have nearly all presented us with an articulator of their own conception. And as history goes on, we can mark a step of progress in every one of them.

One of the most scientific articulators no doubt is that made by Dr. Gysi, but it is Dr. Eltner's anatomical articulator that captures my preference, as it combines with anatomical accuracy, the necessary strength, stability and simplicity.

In order to know if the anatomical articulator is perfect in the imitation of the natural movements of the jaw, it will be necessary for us to consider for a moment the human temporo-maxillary articulation.

I shall not go into details about the anatomy, nor shall we consider the muscles and ligaments. It will, however, be necessary for us to study the *movements*. We have to consider three principal movements: the hinge, the sideward and the forward movements.

The three movements can be executed each separately, or combined with one or with two of the others. The hinge movement is possible only to a slight degree as the arrangement of the muscles and of the ligaments will not allow the condyle to remain in the glenoid cavity, but for a slight opening of the mouth. In the forward movement both condyles leave the glenoid fossa to move over the tuberculin articularis.

In the side movement, only one condyle leaves the glenoid fossa to move over the tuberculum articularis, while the other remains in its place in the fossa.

It is thus that the left condyle is displaced in the movement towards the right, and the right condyle in the movement towards the left. It is therefore necessary to imitate these same movements on the articulator. Dr. Eltner has done this to perfect satisfaction, as you will see by examining his articulator. He has constructed it on the following observation. He justly considers, as did Dr. W. Henke, in 1855, that we have to deal with a double articulation. The articulation of the hinge, which would find its axis in the centre of the condyle, and the articulation of the forward and sideward movements which would have their axis in the centre of the tuberculum.

He has found that in all movements the distance of the centre of the condyle and the centre of the tuberculum always remains the same.

In order to imitate these movements it will be necessary for us to locate these two points on the patient and transfer them to the articulator.

One of them we find by feeling the condyle of the patient and marking its centre with a pencil on the skin. The other, we find by the curve that this point describes in the sideward or forward movements. For as this curve is a part of a circle, its centre must be the axis of movement we are looking for.

How to find these points on the patient and how to transfer them to the articulator will be the object of my demonstration.

Admitting that we have taken our measures correctly, thus being able to imitate all the movements of the lower jaw of the individual in question, it will be useless however, unless the models are fixed in the articulator in the same relation as they are in the mouth.

To do this we shall have to use the face bow which will determine the correct pose in every individual case. After our models are thus placed in the articulator we shall then be ready to set up our teeth in the scientific way as indicated by Dr. Bonwill and lately so perfectly shown by Dr. Gysi. For the anatomical occlusion of the teeth is indispensable in order to properly triturate and masticate the food. This is of the greatest importance when the teeth are in contact, but of no value when the mouth is opened in order to bite off pieces of food of a certain thickness—the biting of a crust of bread, a brezel, an apple, a cracker, etc., will invariably be followed by the tipping of the plate at the back for the adhesion or the pressure of the tongue will not prevent it from falling.

Dr. Eltner has overcome this difficulty by an ingenious application of an inclined plane in the place of the last molar.

These inclined planes are so constructed as to keep in contact during the entire movement of the act of biting. We can therefore have pieces of different dimensions between the teeth and exercise great crushing power without loosening or tipping the plate at the back, as there are always at least three points that touch. You can easily imagine the great advantage of this simple arrangement and the comfort and benefit it gives to the patient.

In order to prove that Dr. Eltner's articulator is correct, I have taken an upper and lower impression of my mouth and have fixed the models in the articulator, and I can obtain the same movements on the articulator as I can with the lower jaw, which is impossible in any other articulator unless it be anatomically correct.

In order to prove the efficiency of the inclined plane, I have made the following experiment: A patient with a full upper and lower denture set up in an old hinge articulator with no pretence of anatomical occlusion, complained of the impossibility of properly masticating his food. I therefore constructed another complete set, mounted in Eltner's articulator with anatomical occlusion and the inclined planes, which gave the highest satisfaction, I have ever noticed in a patient who put in new plates for the first time. The patient was able at once not only to eat bread but to bite hard crackers without loosening or tipping the plates.

In order to confirm the efficiency of the inclined planes I constructed a third upper and lower set without the inclined planes,

which although better than the first set, in no wise compared with the one that had the inclined planes.

The technical details of the question will have to be left for our next demonstration, and I thank you, gentlemen, for patiently listening to me, and for your kind attention.

WHY INLAID BRIDGES FAIL.*

BY ELLIOTT R. CARPENTER, D. D. S., CHICAGO, ILL.

Mr. President and Members of the Odontological Society of Chicago:

Being of rather an optimistic temperament, and especially a radical regarding inlay work in particular, I like most radicals in this dear old world of ours, have often found it necessary to retrace my professional steps, and rebuild many of my earlier masticatory cantilevers which, through faulty knowledge of mechanical engineering, have resulted in sad and disastrous failures.

There is no doubt that all inlay enthusiasts have made many grievous errors ere attaining the success that comes with perfect technique and a thorough understanding of the basic principles, but each mistake, when recognized, corrected and recorded, is simply blazing a trail for the safe travel of our professional brothers who follow later. To the end that they may be saved the many heart-aches and embarrassments due to failure I sincerely dedicate this paper.

The whys of the subject of this paper can be answered in a few lines, but each line represents enough subject matter for almost a group of essays, but I will touch briefly only upon the most salient points, as I see them.

FAILURE IS DUE TO

1. Improper sequence of abutments.
2. Improper cavity preparation.
3. Insufficient depth of anchorage.
4. Insufficient marginal bevel.
5. Faulty alignment of abutment inlays.

*Read before the Odontological Society of Chicago, March 11, 1913.

6. Too light, or thinness of castings forming the span of one or more dummies between abutments.

7. Pyorrhea molars as abutments (a hypothesis).

1. By improper sequence of abutments I mean a succession of abutments at one end of the bridge or the other, as the case may indicate.

(Exhibit A) Space to be bridged from lower first bicuspid



to second molar, the second bicuspid and first and third molars missing; the second molar having become slightly loosened (not from pyorrhea), but from lack of being held back in its socket.



and, as is the natural law of all teeth, back of the cuspids to move forward when the integrity of their contact points are destroyed by the loss of one or more teeth anteriorly of it.

The second molar standing alone is subjected to great lateral stress in masticating, and needs additional strength from the anterior abutment to help it retain its rigidity; hence the anterior

abutment should be made in a sequence anchored to the two anterior teeth of the space, as in this special case Exhibit A.

2. *Improper Cavity Preparation.*

So much has been written of late on this all-important, or I might better say, vital subject, that it seems almost an affront to attempt an elucidation before so aggressive a body of investigators as this Society. So I will simply call attention to the cavity preparation as relative to bridge work. All inlays for abutments must be compound, or double compound proximals and of a dovetail or retentive form. The base or proximal seats must be flat, extending quite to the cervical border or gingiva, and below the gum when the outer gingival border is properly beveled, which serves to protect that part of your abutment from future caries. An exception may be made to this rule, however, when the abutment teeth are of the inverted cone variety or shape and very narrow at the necks. Then the abutment inlays may be extended two-thirds the distance from the occlusal to the cervix; this refers especially to bicuspid and cuspids.

The width between the cervico buccal and the cervico lingual margins should be great enough to permit of a strong solder attachment between abutment and dummy, and right here let me state that I believe all dummies should be cast separately and attached in assembling with solder, to give the greatest possible rigidity to the finished bridge. The work of shaping the cavities should be largely done with cylindrical shaped stones and burrs which tend to make the resulting cavities a series of sharp angles and flat seats, none of which angles should be compromised except at their outer margins, where they should be rounded only wherein they participate as a part of the continuous outer marginal bevel.

3. *Insufficient Depth of Anchorage.*

Shallow anchorage is absolutely fatal for the longevity of inlay bridge abutments, and should not be countenanced by the operator in this field of work who desires to accomplish permanent operations and honestly serve his patrons. And I have only to refer you to Exhibit B—my bridge morgue—as a glittering example of why abutments should not be shallow.

The two all gold failures are my own, and the two with porce-

lain facings are the handicraft of confreres in the far East. More power and depth to them! They were brave men anyway.

The greater the depth of an abutment, the greater its ability to withstand lateral stress; hence following out that law I do not hesitate to remove pulps in the majority of teeth and attach a generous sized irridio platinum post to my inlay abutment, which forever obviates the possibility of that abutment becoming loosened in its cavity, due to the weaving of the bridge by mastication, the deep posts anchoring the abutment inlays down tight against their seats and marginal bevels.

4. *Marginal Bevels.*

Marginal bevels should be slightly less than those used in gold foil fillings, and be somewhat exaggerated at the cervical and occlusal margins, as compared to those of the buccal and lingual perpendicular margins.

5. *Faulty Alignment of Abutment Inlays.*

That the finished bridge may go squarely to its seat, it is necessary that the abutments be in perfect alignment, and this may be accurately accomplished by preparing the anterior cavity or cavities first, drilling out the gutta percha root filling, and placing a German silver post into the root canal to the depth desired of the permanent irridio-platinum posts, allowing it to stand out of the cavity a quarter to a half inch beyond the occlusal surface, which gives the alignment post or guide as you carry your cavity over the occluso-proximal angle, and so on down to the cervical margin, keeping the same perpendicular. Carry your wheel stone backward, opening up and roughly forming the cavity for the distal abutment, and if the distal tooth is perpendicular in its sockets, a root reamer may be dropped into the distal root, and the root filling removed to the desired depth, a German silver post is then dropped into position, and the two cavities outlined with cylindrical stones and burrs placed in a right angle.

A test of alignment is now made before commencing the marginal bevels. Leave the elongated alignment posts sticking out of the cavities, carefully lubricating cavities and outer surfaces of the abutment teeth with a solution of one-half glycerin, and one-half olive oil, as a separating medium. Take a stick of inlay wax

slightly longer than the span over the tops of the two alignment posts, soften both ends of the wax stick by holding alternately in an alcohol flame and then forcing same horizontally down over the ends of the alignment posts into all of the cavities, as in inlay impressions. When wax is absolutely to seats, chill with cold water, trim off marginal overhangs, attach posts firmly to wax bar by touching with hot spatula, and if your alignment is correct, the wax bar with pins attached may be easily withdrawn from abutment cavities, after which the marginal bevel may be completed and the abutment cavities are ready for the permanent pins and inlay impressions.

6. *Thinness of Dummy Castings.*

I believe some of my failures have been due to the thinness of metal castings surrounding and engaging the porcelain tops of the completed dummies, and would counsel a careful inspection of the wax dummies after porcelain tops have been removed, before investing, preparatory to casting same. Holding the wax dummy bases up to the light will easily reveal any dangerously thin spot and demands replacing the porcelain teeth to keep from distorting, when an additional thickness of wax can then safely be added.

7. *Pyorrhea Molars as Abutments (A hypothesis).*

I can almost hear the buzz of the dental anvil chorus now as with grim determined faces you are preparing to answer such rank and flagrant heresy, but remember, gentlemen, I am presenting this section of my paper as a theory, which I believe has merit at least worthy of your sincere consideration.

Take, if you will, a case where the lower second bicuspid and first molars are missing, and the second molar has leaned forward into the space. The second molar has, from its movement forward, raised up at its disto-occluso-proximal angle, and been unmercifully hammered into the first stages of pyorrhea; has it no chance for a few years of usefulness? I think it has.

I would suggest this test: If, upon pushing the molar in question firmly back against its posterior socket and holding it steady, the tooth does not permit of perpendicular movement, (up and down in its sockets), and is fairly rigid against lateral movement, it is possible to make it a useful member of the dental arch.

Of course it is only fair to your patient and yourself to state the case fully and fairly, and if they, realizing the uncertainty or lack of possible permanency, are still desirous of giving it a trial (you will be surprised how many patients, dreading the loss of teeth and the wearing of removable substitutes, are willing), I would suggest the following:

Band accurately the two anterior teeth of the space and solder the two bands together before setting the now twin bands with cement, attach to the loosened molar an anchor band slightly crimped at its gingival borders to give it greater gripping power; fastening between the anterior bands and the molar anchor band a jackscrew, which can be gradually turned up until the molar has been driven back firmly into its sockets, when it can be left for six months before removing the fixture. If the molar has become firm, you may now proceed with the bridge.

In closing, I would suggest referring these cases to the Orthodontists, as I believe their knowledge and judgment in the gentle art of moving teeth to be much keener than that of the general dental practitioner.

REPORT OF THE COMMITTEE ON DENTAL ART AND INVENTION.*

BY DR. S. P. BOWYER, TAILORVILLE, ILL.

To the Members of the Illinois State Dental Society:

The past year like all former years has brought out many new appliances for the dental profession. The manufacturers have been very courteous in assisting to make this report, only two or three have failed to get their report to me in time.

At the suggestion of the program committee I will only read the names of the manufacturers with a list of the articles and leave the description of each article to be printed in the transactions.

*Read before the Illinois State Dental Society.

NEW APPLIANCES. THE JOHN HOOD COMPANY, BOSTON, MASS.

Strip Solder and Dental Flux. The solder in strip form to use in conjunction with dental flux.

* * *

THE L. D. CAULK CO., MILFORD, DELAWARE.

Strips and Disks. The sand is mounted on celluloid strips and disks without any varnish, glue or anything of that character so that the strips can be used equally as well wet as dry.

Tenacit Silicate Cement. A silicate cement not for fillings but for setting crowns, bridges, inlays, etc. Very sticky and translucent.

* * *

KEETON-WILLIAMS, KANSAS CITY, MO.

Gold and Instruments. A new package containing ten plugger points; a mica annealer— $\frac{1}{8}$ ounce Keeton-gold.

* * *

A. C. CLARKE & COMPANY, CHICAGO, ILLINOIS.

Lauder-Dale Hydro-Tractors. Are tongue and cheek retractors, combined with a water-dropper, the construction and combination of which renders the guarding and retraction of the tongue, cheek and lip, also the application of water, easily accomplished by one hand of the operator or assistant; made in right and left and of aluminum.

* * *

DENTAL UTILITY MFG. CO., CHICAGO, ILLIOIS.

Luxmore Analgesic Outfit. A new method of mixing nitrous-oxide and air; the mixture of air and gas regulated by the amount of air allowed to enter through the small opening in the controller; the appliances being suspended by tape about the neck permitting entire freedom of the patient during administration. The inhaler attached to the nose with rubber tips of various sizes to suit the case in hand. It can be used in connection with any gas machine which is fitted with a collapsible rubber bag.

* * *

LEE S. SMITH & SON CO., PITTSBURGH, PA.

Guedel Gas Apparatus. A gas apparatus in which the patient holds the nasal inhaler which fits over the nose; a complete outfit.

Aseptic Dental Glass Ware. The following articles are made of opal glass, white in color, of best quality:

- (1) Instrument Rack No. 1 carries six long handled instruments each resting in its own groove.
- (2) No. 2—same, only carries twelve instruments.
- (3) Bur Racks Nos. 1 and 2—each bur rests in its own groove and projects just far enough beyond the step to be lifted out with the finger; No. 1 small size and No. 2 large size.
- (4) Allan Bur Rack made to displace the wooden block supplied with the Allan Table.
- (5) Minimum Aseptic Trays—the set consists of three oblong and nine square pieces and fits the drawer of the ordinary bracket table.
- (6) Aseptic Disk Tray; the bottoms of the twelve compartments of the tray are rounded; the tray fits the drawer of the bracket table and may be used either for disks or other little things.
- (7) Aseptic Glass Trays; was designed to provide a glass lining for the drawer of the ordinary bracket table.
- (8) Aseptic Cotton Holder; a two piece holder for absorbent cotton; the upper and lower sections are united by a screw thread of glass, and the device is devoid of all springs and mechanism that would detract from its aseptic properties.
- (9) Aseptic Cotton Holder—cut glass design; is made for the dentist of fastidious tastes who desires something out of the ordinary.
- (10) Aseptic Cotton Receiver; an air tight self closing receiver for waste cotton; the slightest thrust of the pliers displaces the stopper which automatically removes the cotton from the pliers and deposits it in the receptacle.
- (11) Moffit's Aseptic Waste Receiver; carries a perforated paper disk under the removable cap which is pushed to the bottom of the receptacle at the conclusion of each operation; in this manner an absolutely clean surface is presented for each patient yet it is necessary to empty the receptacle but once a day.
- (12) Hunt's Absorbent Jar; is designed to carry disks of absorbent paper, the underside of which is waterproofed and will

be found valuable in removing excess moisture from the cotton pellets used in treatments.

- (13) Aseptic Rubber Dam Container; is made to provide an air-tight receptacle for rubber dam and by preventing air and light from coming in contact with the dam will greatly prolong its efficiency; the stopper is ground, rendering it air tight.
- (14) Aseptic Glass Jars; are made in two sizes to accommodate one and one-half ($1\frac{1}{2}$) or six (6) inch Dental Rolls.
- (15) Aseptic Dish for dental napkins; a shallow receptacle for six inch dental napkins that will harmonize with other aseptic equipment.
- (16) The Biddle Broach Sterilizer; is provided with removable glass partitions for classifying all instruments used in the treatment of root canals; the instruments are immersed in a sterilizing solution, being removed only when in actual use.
- (17) Aseptic Alcohol Lamp; in opal glass to have it in harmony with other aseptic equipment.
- (18) Medicine Bottles, labeled—round—capacity one ounce; supplied in 38 labels in plain letters burnt into the glass.
- (19) Medicine Bottles—square; capacity $\frac{1}{2}$ oz. ground glass stoppers.
- (20) Aseptic Cement Slab; is provided with rubber feet and the top is ground and polished.
- (21) Aseptic Mortar and Pestle; made of opal glass.
- (22) Office Preparation Bottles; No. 1—capacity $\frac{1}{2}$ oz. No. 2— $1\frac{1}{2}$ oz. and No. 3—6 oz. hollow glass cover ground to fit the neck.
- (23) Smith Solarization Case; the corrugated sides of the case magnify the rays of the sun thereby increasing its efficiency; the lid is close fitting to prevent evaporation of the alcohol in which the piece is immersed, and by the use of this method a rich shade of the rubber is developed impossible to obtain otherwise.
- (24) Aseptic Cotton Receiver—Surgical; designed primarily for the use of physicians but will be found of great value to dentists providing an aseptic receptacle for soiled cotton

rolls, extracted teeth, etc., its operation is the same as the cotton receiver explained above; it is made of dark green glass to prevent bloodstains being seen by the patient.

(25) Aseptic Razor Rack; designed primarily for the use in Aseptic barber shops but will be found a desirable addition to the toilet requisites of the particular dentist who shaves himself.

(26) Automatic Operating Stool: the action of the automatic stool is extremely simple, it follows the body in every conceivable direction, the only difference is your weight is on the stool instead of your legs; a slight touch on the lever raises or lowers the stool to any desired height; it cannot slip out from under you; the weight of the body transmitted through the spring at any angle forces the base straight down.

* * *

THE PINCHES DENTAL MFG. CO., BUFFALO, N. Y.

One Case Tantalum Instruments. Showing different styles in instruments.

Three Bottles and One Piece Ore. Showing the different stages of tantalum in process of manufacture.

Aschers' New Artificial Enamel. This silicate has been improved.

Pinches Sil-Ox Cement. A new cement for fillings.

Pinches Crown and Bridge Cement. For setting crowns and bridges.

Lightning Disks and Strips. Very thin steel strips and disks made of finest Swedish steel with heavy coating of alundum electrically incorporated into the surface of the steel; assorted widths and grits.

* * *

PELTON & CRANE COMPANY, DETROIT, MICH.

Air Filter, Condenser & Insulator. Used to filter air which is supplied by the building.

No. 6 Special Bracket Table. This is composed of four small tables. Inside of each table is an electric bulb which warms the table and throws through the frosted glass a subdued light; the heat is just sufficient to keep the instruments warm and prevent disease

carrying insects from lighting on them; also supplied with one large bulb which will produce heat to anneal gold; soften wax; modeling compound or warm a glass of water; aluminum rim and glass top are easily removable for sterilization.

* * *

THE RANDLE-FAICHNEY CO., BOSTON, MASS.

Imperial Syringe No. 3. The packings in the head are held in a cartridge and easily removable for sterilization or renewal.

* * *

KLEWE & COMPANY, NEW HAVEN, CONN.

Glass Burnishers for Burnishing of Gold Matrices. These instruments have the property of burnishing out the minutest parts from the margins of a matrix and do not seem to have a tendency to disturb the matrix nor cause it to rock.

* * *

JOHNSON & JOHNSON, NEW BRUNSWICK, N. J.

New Size Dental Napkins (Called "Napettes"). Same material as No. 2 Dental Napkin—2x6 inches in size.

* * *

CONSOLIDATED DENTAL MFG. CO., CHICAGO, ILL.

Off-Set Davis Crown Pins. For the many roots where a straight pin does not permit natural alignment of the crown with the root.

Modelrite Modeling Compound. A new modeling compound which makes sharper and more accurate impressions.

* * *

THE W. V-B. AMES CO., CHICAGO, ILLINOIS.

Berylite Cement. A new cement for filling which is put in while in a stiff or putty-like consistency.

* * *

THE W. M. SHARP CO., BINGHAMTON, N. Y.

New Sharp Swaging Press. Its important uses are—first, as a means of swaging gold backings directly to porcelain teeth of any description both anterior and posterior, for dummies on bridge work and for swaging regulating attachments and appliances;

second, for swaging seamless gold crown in connection with a sharp crown outfit; third, as a disk cutting device.

* * *

H. D. JUSTI & SON, PHILADALPHIA, PA.

"True to Nature" Tooth Molds. New tooth molds that are copied from nature.

* * *

RITTER DENTAL MFG. CO., ROCHESTER, N. Y.

Folding Bracket—Swivel Type "C" Elec. Engine. A new engine embodying two different types of engines in one.

* * *

CLEVELAND DENTAL MFG. CO., CLEVELAND, OHIO.

Parker Root Elevating & Martin Root Forceps. The Parker Root Elevating Forceps do not extract the root but break up the attachment of the root from the socket, when it can be easily removed with any root forceps or pliers; the beaks of the forceps are adjusted either above or below the gum margin; press the handles and the beaks dip toward the apex of the root and detach it from the socket, it is then easily removed; the anterior is also used for impacted lower third molars.

The Martin Root Forceps; superiority is due to the peculiar form of the beaks which are thin, sharp at point, and edge strengthened by an outer rib made sharp near its point; in use the beaks are more easily forced into the root socket and nearer to the apex than would be possible with an instrument of different construction.

McDonald Backing Press. Is used for making backings for interchangeable teeth; a saving in the cost of manufactured backing.

Improved Dentinol Pyorrhea Scalers. A new set of scalers used by the Pyorrhocide Post Graduate Pyorrhea Clinic in New York City.

Improved Dentinol Prophylactic Files. The angles of these files are identical with those of the corresponding scalers; the extra fine serrations on these files facilitate the smoothing of the root surface.

DETROIT DENTAL MFG. CO., DETROIT, MICH.

Kerr Carving Compound. A carving compound that withstands heat of low fusing metals, carves nicely and does not shrink or expand.

Kerr Sticky Wax. Comes in bulk and stick form. A tough flexible wax that does not shrink in cooling.

Kerr Blue Inlay Wax.

Kerr Graphite Inlay Investment.

Kerr Graphite Soldering Investment.

Kerr Soldering Tweezers.

* * *

THE DENTIST'S SUPPLY COMPANY, NEW YORK CITY.

Gysi Adaptable Articulator. A new anatomical articulator perfected by Dr. Gysi in which all the movements of the jaw can be duplicated in the articulator.

Gysi Simplex Articulator. A modification of the adaptable articulator having a fixed condyle path made on the average of 1,000 cases. The bite may be raised or lowered without interfering with the articulation. Has properly placed rotation points—a form of glenoid fossa and condyle which permits proper lateral movements of the mandible.

An incision guide and pin to support the front of the upper model bow.

New Anatomical Mould of Teeth.

* * *

THE S. S. WHITE DENTAL MFG. CO.

Thin Celluloid Strips No. 2. These are extremely thin—only about 3/1000 of an inch thick,—which means that they can be gotten into practically any space between the teeth. You can enjoy their advantages as a matrix for approximal fillings of cement, especially the silicates, or can make a band matrix for any cement contour work. They are transparent,—you can see when the contour is complete and margins perfect,—and they give the filling a higher polish and finer finish than you can make with polishing disks or tape. Another important use is in making wax patterns for gold inlays; they give the surface against them a beautiful

polish. Still another is in making contoured gutta-percha fillings. 5 inches long by $\frac{1}{2}$ inch wide.

Angle and Handpiece Oil Can. This new oil can delivers the oil directly on the working parts of angle handpieces. The life of handpieces and angles can be conserved by using S. S. White Engine Lubricant and this oil-can according to our directions accompanying each can. A valuable combination: Our splendid lubricant and our new oil-can. The one best oil for lubricating handpieces and angles, and the only successful means for applying it.

A More Valuable Combination: The above together with S. S. White engines, handpieces and burs. No other oiler has a tube small enough to enter the oil holes. With the old forms oil does not actually reach the spot.

Northwestern University Plugger Points. Set of 14. Dr. G. V. Black's Patterns. The fourteen plugger points comprising this set have been selected or especially designed by Dr. Black, with the idea of providing the smallest possible number of pluggers which would serve every purpose in the filling of cavities, regardless of location or character. Of the fourteen, four (Nos. 1, 2, 7, 8) are parallelogram points; three (Nos. 10, 11, 12) are foot shapes, with varying reaches; and seven are round, of which three (Nos. 3, 4, 5) have an angle of three centigrades, two (Nos. 6 and 14) are bayonet shape, and two (Nos. 9 and 13) are hand-pressure points. Special attention is called to the four parallelogram pluggers. These points, parallelogram in form, with faces slightly convex, are designed to enable the operator to get the best condensation of gold along cavity walls by holding the flat side of the nib directly to the wall. The convexity of the faces makes these points desirable for condensing gold over the margins, as there is less danger of chipping or fracturing the enamel. The pair having an angle of three centigrades (Nos. 1, 2) may be used for the bulk of the work in incisor teeth, although they may be used in bicuspid and molars. The contra-angled pair (Nos. 7, 8) were designed to secured the proper direction of the force for condensing gold at the margin of the gingival wall of mesio-occlusal cavities in the bicuspid and molars. Made only for automatic plugger work, and with short shanks. The working heads are of exact sizes, finely and accurately serrated.

Brush Wheel No. 88. . Because the bristles are always the best for the special use, because they are put into hubs so they won't come out, and because the hubs themselves won't crack or split, are reasons for the greater efficiency for our brush wheels.

The new form (No. 88) here shown is like our old No. 65, but with the outside of the bristles chamfered down to an edge. Its special use is in polishing the interstices between the teeth of artificial sets, around the gum margins, and especially where the festoons are marked. It eliminates changing to the engine to polish these localities, enables you to use the lathe as you never could before, wearing down quickly just the parts you want worn down. Low speed is essential in its use; otherwise you wear out the brush unduly and fail to get its best work.

Tongue Scraper No. 2. Often in the morning the tongue is "coated," sometimes offensively, always more or less uncomfortably. Precipitates from the saliva during the night have caused it. How do you advise your patients to remove it? The brush may do it to an extent, but not so effectually, nor so pleasantly for that matter, as the tongue scraper, and it is important that it be done thoroughly. The morning toilet of the mouth is not properly completed till the "coating" is removed.

Those who are not familiar with the tongue scraper scarcely know the luxury of a perfectly clean mouth. There's an almost indescribable feeling of comfort after its use; not merely that you know your mouth is clean, but a sort of pervading sense of gratification that it is so.

Tongue Scraper No. 2 is an improvement on the appliance we submitted some fourteen or fifteen years ago. The bow or scraper proper is nickel-plated and polished, the inner surface flat, the outer rounded, the two coming together in a smooth dull edge, just suited to the work of clearing the soft surface of the tongue of any "coating." Easily cleaned, or sterilized if you wish. The white celluloid handle is shaped to fit the hand or to give an easy grip for the fingers. A fine, efficient instrument for its purpose.

Orangewood Points No. 2 (Concave). This new point (suggested by Dr. J. J. Stetzer) has a fluted or concaved end, fitting it especially for cleaning the lower incisors and cuspids, complementing and supplementing the No. 1. Its advantage in these smaller forms of teeth is that it acts on the entire surface included

in its concave end, and can be insinuated slightly under the gum without injuring it.

SSW Mouth Mirrors. We now have ready for the profession what we consider to be the best mouth mirror on the market. The good features about it are these: The angle at which it is placed; the fact that it can be sterilized in boiling water; the quality of the mirror which is the best obtainable; its weight; it is light and beautifully balanced for even the most delicate operator; it is cone-socket with hollow metal handle, nickel-plated. The whole mirror is elegantly finished, even the handle having what is known as a satin finish making it smooth and agreeable to the touch.

These mirrors are numbered, the number designating both the size and style of the lens.

John Wessler Model Tooth Brushes.

All-Metal Elevators. What a difference you will find in these elevators from those with which you are familiar. And it's all in the handles. They are of hollow brass, nickel-plated, affording strength with lightness. But the shape of them! It took much study and many trials to get them to conform so perfectly to most hands. When you grip one of them you find it filling the hand so that it gives you a wonderful leverage; in whatever position you use the instrument you have perfect control—can work most effectively. These metal handles raise the elevators, to which they are attached, to the rank of aseptic dental instruments. They are readily sterilized; no sterilizing solution will injure them.

Five forms: Nos. 13 and 14 have short recurved shanks, for strong roots; Nos. 20 and 21 have long shanks and are especially useful in removing frail roots; No. 26 is the well known Coolidge form, a universal molar root extractor.

Van Horn's Wax Carving Instruments. While every practitioner recognizes the necessity of a perfect wax pattern in making a gold inlay, very few have made the comprehensive study of the means for assuring it that the numerous papers of Dr. Van Horn have revealed. His latest contribution to the technique of the inlay is the set of wax carving instruments. They make this often unsatisfactory part of the procedure an easy operation. Made cone-socket only.

Cone Socket Handle No. 14. Lightness, strength and an easy sure hold, are the principal features of this new cone-socket han-

dle illustrated. Made of tubular brass, octagonal, without taper, ends dome-shaped, and nickel-plated all over.

Prinz Root-Canal Filling. The paper by Dr. Hermann Prinz on the filling of root-canals, which appears in the *Dental Cosmos* for October, 1912, is well worth the reading of every practicing dentist. It presents an illuminating view of the entire subject, and tells of the experiences and experiments which led its writer to advocate the hard paraffin material here advertised.

Why paraffin and bismuth trioxide should bring success in this often unsatisfactory operation is told in the claims which are made for it:

That it is non-putrefactive, is sterile and slightly antiseptic; is easily introduced; is absolutely non-irritating to the soft tissues, causes no reaction when forced beyond the foramen or through a perforated root; does not discolor the tooth structure; possesses a distinct yellow tint, which makes it readily discernible to the eye; is non-porous and unchangeable, produces an absolutely permanent and water-tight filling; is easily removed; seals the dentinal tubuli and the foramina hermetically against the bacterial invasion; and is opaque to the Roentgen rays.

Plaster Knives Nos. 8 and 9. These knives, No. 8 (straight blade) and No. 9 (curved blade), designed by Dr. J. G. Lane, are primarily for the use of orthodontists for the purpose of removing plaster impressions where it is necessary to remove them in pieces.

No. 9 with the curved blade is for cutting a V-shaped groove part way through the plaster over the canines, either upper or lower.

No. 8, the straight-edged knife, is for breaking the impression by inserting the knife in the groove previously cut and giving it a short pry backward.

Waxed Floss. 24-yd. Spools in metal box with cutter. Thinness, smoothness, strength—which is most important in floss silk it were hard to tell. It has to go into very narrow spaces in ligaturing and in cleaning the teeth; it must run smoothly or it may cause injury to the gum tissue; it must be strong, to resist a pulling-strain. tough to stand abrading stress.

All of these combine to make the S. S. White Floss Silk the most dependable floss for the dentist or his patient. It is free from

knots and uniform in thickness. We put it out in various sized spools to meet various needs.

The nickel-plated box with cutter, has proved so popular on account of its convenience, its economy and its beauty that we now put out a 24-yard size, which will doubtless find even wider acceptance.

Guide Block for S. S. W. Gold Shells. We are prepared to supply guide blocks of wood having pegs approximating the inside diameters of S. S. White gold shells. We would like to advise that the pegs, being of wood, will vary with atmospheric changes. We, therefore, cannot guarantee that they will at all times represent exactly the sizes of S. S. White gold shells. However, this block will be found to be of great convenience to those who order gold shells by mail, etc.

Plaster Knife No. 7. Pattern by Dr. A. DeWitt Gritman. Whoever has taken plaster impressions of jaws, with teeth still standing in them, has experienced the difficulty of breaking up the impression, as is necessary to remove it from the mouth. This tool simplifies the operation. Technically it is called a knife, but it has no knife edge. Instead it has a flat thin blade with every edge squared, so that it readily cuts a groove in the partially hardened plaster.

After the plaster has set sufficiently, the tray, which is vaselined previous to the placing of the plaster, is removed, leaving the impression in position and the knife is used to cut a groove over the incisal edges and occlusal surfaces of the teeth. Where teeth are missing this groove can be cut deep,—almost to the gum. Then, with a slight twist of the knife, the plaster is broken, with clean fractures, so that it is easily reassembled in the tray.

The Plaster Impression Splitting Knife is double end, the two blades having peculiar curves, fitting them, one for service in the upper jaw, the other in the lower. Ebony handle.

D. E. Explorers Nos. 1, 2, 3.

Forceps No. 85A. We have added to our regular line of S. S. W. extracting forceps one that is like No. 85 except that the beaks are very much narrower—about the width of No. 32a.

Perfection Polishing Strips, Cuttle-Fish. Very thin, will enter narrow interspaces. Extremely tough, will stand the see-sawing

of work. Properly charged, will hold the polishing powder till worn off.

Spatula No. 37. This spatula is designed to do finer and better carving of plaster models, especially around the cervical margin of the tooth, and also the final carving of the waxed plate before flasking.

Mixing Tablets Nos. 7 and 8. No. 8 is the same size as our No. 6 and being made of polished white Carrara glass, are neat and clean in appearance and are in line with the present demand for aseptic and white apparatus, etc., in the dental office.

No. 7 is about the same size as our No. 5 and is also white, being made of opalite.

Contra Angle Porte Polisher. As in every other form of dental instruments in which it has been tried, contra-angling adds immensely to the value of the porte polisher as an aid in prophylactic instrumentation. Polishing and massaging with orangewood points and pumice flour is the last word in the instrumentation of the necks and roots of teeth, after the removal of deposits, preparing them for a healthy reattachment of the pericemental membrane.

Our Contra-Angle Porte-Polisher affords an extreme range of application; it permits you to carry the orangewood point to any tooth root in the mouth, making any desired surface accessible and amenable to the polishing and massaging.

It affords a control not possible with any of the old forms; contributes to delicacy of touch, lets you apply the point firmly yet gently, with no tendency to wobble.

Its operation is simple. Turning the handle to the right forces the hidden clamp to lock the orangewood point; turning in the opposite direction loosens it.

Finely made; the nickel-plated parts are readily sterilizable; ebonized wood handle.

Spatula No. 36. We have added to our regular line of S. S. W. Spatulas one that is similar in shape to our No. 22, but heavier in construction. The blade is larger than that of No. 22 and does not taper, and by reason of its being heavier is very efficient in mixing powder and liquid thoroughly and completely. The use of a light, easily handled and flexible spatula often results in failure to obtain a thoroughly homogeneous mix of cement. The handle is

made of steel, is octagonal shaped and considerably heavier than that of No. 22.

Solder Tweezers "N." These tweezers will prove very useful, as it is not necessary to hold them in the hand. Standing upright on the bench, they will hold between the jaws the piece to be soldered, thus leaving the operator's hands free to place the solder or hold the blowpipe. Dr. T. J. McLernon, who furnished the pattern, says that anyone doing small soldering operations should have two pairs, a pair to hold each piece of material when there are two pieces to be soldered together.

Annealing Tray No. 9 with Alcohol Lamp No. 26. The lamp is a modification of our alcohol No. 2. The annealing tray is similar to our No. 5, but has a flame shield attached. This apparatus is provided with mica and soapstone disks.

Wax Carving Tool No. 6.

REPORT OF THE COMMITTEE ON NECROLOGY*

BY DR. E. K. BLAIR, WAVERLY, ILL.

DR. ALFRED ALEXANDER BROMAN was born in Chicago, Illinois, April 19, 1872 and died February 10, 1913, aged forty years and ten months.

He graduated from the Illinois College of Dentistry in the class of 1903. He was president of his class during his senior year and a member of the Delta Sigma Delta Fraternity. He was president of his College Alumni during the year 1906.

He joined the Englewood Dental Society in 1908, served as secretary of this component society in 1910, and was a faithful and loyal member.

As a tribute to his memory the following resolution is spread upon the records of the Englewood Society:

"Resolved that in his death our society has lost one of its most estimable members, an ideal professional brother, a model citizen, a man who so fearlessly and willingly performed every duty to society and to himself, that he won the friendship of us all."

His death was preceded by a lingering illness of eighteen

*Read before the Illinois State Dental Society.

months, enlisting the sympathy of all who knew him. Men of this type are needed in our ranks and we regret their deaths sincerely.

DR. RUDOLPH BECK was born in Prague, Austria, Sept. 18, 1868 and died of tumor of the brain, in Chicago, March 15, 1913, aged 44 years, 5 months, 27 days. He is survived by three brothers, all physicians, Carl, Emil and Joseph and two sisters, Mrs. Winternitz and Mrs. Buxbaum. His early life was full of hardships that were overcome by his indomitable courage.

"In 1899 he graduated from the Chicago College of Dental Surgery and was appointed Professor of Dental Anatomy in this institution—a position he held at the time of his death."

The *Dental Review* says—"Dr. Beck was one of the most cheery and lovable characters in the dental profession and he will be greatly missed by his immediate friends and associates in Chicago. Exacting to the last degree in the demands he made upon himself, he at the same time extended to others the utmost limits of his charity. He was a scholarly, well read man—an ornament to the profession and to society at large. The world can ill afford to lose such a man and to dentistry the loss is irreparable."

DR. JOHN LEGGETT was born at Richmond, McHenry Co., Illinois, June 24, 1866 and died at his home in Chicago, March 20, 1913, aged 46 years, 8 months, 26 days.

He graduated from the Hayes Public School in 1882, attended the West Division High School and graduated from the Chicago College of Dental Surgery in 1887. In June, 1888, he was married to Helen A. Ryan, who with two children—Mrs. Ralph Hawxhurst and Richard H. Leggett survive him.

He was a member of the Chicago Dental Society, Chicago Dental Golf Club and the Town and County Club.

Dr. Leggett ranked high in point of ability amongst his professional brethren—enjoyed the friendship of many people, and his death was a shock to all who knew him. Interment was at Richmond—the pallbearers very appropriately were chosen from his class mates of 1887.

DR. NATHAN A. KELLY of Lincoln, Ill., was born on a farm near Pittsfield, Ill., March 24, 1865, and died at Eureka Springs, of brights disease, June 28, 1912, interment taking place at Pittsfield, Illinois.

He was a student with Dr. Varney of Griggsville, Illinois and later graduated from the Ohio College of Dentistry in 1889 and joined the Illinois State Dental Society the same year, having located at Flora, Illinois. Later he moved to Olney, and thence to Lincoln, where for twelve years he enjoyed a lucrative practice.

He as a member of the Logan County Dental Society. His widow and two children survive him. Dr. Kelly was a genial, kind-hearted man, had many friends and was beloved by all who knew him.

That "he loved his profession and practiced the strictly ethical principles he advocated" is the testimony of his neighboring practitioners.

DR. JESSE AUSTIN DUM was born in Hinckley, Medina Co., Ohio, June 29, 1851 and died in Chicago of angina pectoris, April 9, 1913, aged 61 years, 9 months, 10 days.

He was educated in the public schools of Medina and Columbus, Ohio and studied dentistry with his father, who died in 1871, moving to Chicago in 1884, he graduated from the Chicago College of Dental Surgery in 1885. He was ex-president of the Odontographic Society of Chicago—a member of the Illinois State Dental Society—The Chicago Dental Society—The National Dental Association—The Delta Sigma Delta Fraternity—The Hamilton Club and the Ohio Society.

In addition to his practice he gave much time to devising useful appliances. Endowed with marked inventive genius he designed many instruments used by physicians and dentists.

Dr. Dum was also "intensely interested in Y. M. C. A. work and was closely associated with the men who have made this work such a potential factor in the welfare of the young men of Chicago. He is survived by his wife and one sister.

DR. A. H. FULLER, aged seventy-one years, retired Dentist and Civil War veteran, died at his home, 4004 Delmar Boulevard, St. Louis, Missouri, Oct. 22, 1912. He became a corresponding member of this society in 1880.

He was a native of Massachusetts, moving west in 1855, settling in Warsaw, Illinois. In 1862 he enlisted as a private in 118th Illinois Volunteer Infantry, serving throughout the war with rank as quartermaster's sergeant. In 1872 he graduated from the St. Louis Medical and Missouri Dental Colleges and continued to

practice until about 5 years ago. He was twenty-nine years professor of operative dentistry in the Washington University Dental College, of which he was dean two years. A former president of the Missouri State Dental Society—The St. Louis Dental Society and the St. Louis Society of Dental Science. He was also a former treasurer of the American Dental Association, a member of the Iowa Dental Association, the Missouri Historical Society and the New England Society.

Dr. Fuller was married in 1874 to Mary E. Darst, who survives him with three children—Alfred Darst, Homer, Albert and Miss Helen Julia Fuller. Dr. Fuller was a nephew of Dr. Homer Judd. A skillful and learned practitioner, he enjoyed a lucrative practice and was blessed with much property at the time of his death.

As old army comrades, he and the lamented Dr. Edgar D. Swain were fast friends and many of our members enjoyed with them their annual visits at our State Society.

DR. W. L. BRIDWELL of Metropolis, Illinois, a native of Tennessee, died at the home of his son in Jonesboro, Illinois in March, 1913, aged 76 years, having practiced dentistry forty years. He became a member of the Jefferson Union District Dental Society in 1906, was a Civil war veteran—a member of the Christian church and had been twice married. Five children survive him—two from the first union and three from the second.

Dr. Bridwell was a respected citizen and had taken an active part in the development of the community in which he resided.

DR. THOMAS WESTON PRITCHETT, the son of Isaac and Sarah (Holmes) Pritchett, was born May 7, 1841, on a farm two and one half miles west of Whitehall and died in Whitehall, January 20, 1913, aged 71 years, 8 months, and 13 days. Isaac Pritchett was the son of Jacob and Mary Pritchett, who emigrated from Millville, New Jersey to Ohio in 1805. Deceased grew to manhood near Whitehall, enlisting in the year 1862 in Company G, Ill. Volunteer Infantry, and remained with the regiment until the close of the war. He then attended schools in Indiana and Ohio, later studying Dentistry with Dr. James Ball of Centerville, Indiana. In 1867 he opened an office in St. Louis, Mo., in partnership with Dr. Geo. Silvers. There he remained until 1869, when he returned to Whitehall—the home of his youth. On October 5th, 1869, Dr. Pritchett

married Miss Naomi Allen, whose death occurred Jan. 13, 1913. Their two sons, Charles and Dr. Ross A. Pritchett, survive, together with his sister Mrs. Ormsbee of Chicago and one grandson, Edmond Pierce Pritchett.

Dr. Pritchett was a member of the Madison County District Dental Society and an honorary member of the St. Louis and Morgan Co. Ills. Dental Societies. He was also an active member of the *Culver Post G. A. R.* and the Masonic Lodge.

We quote from the *Whitehall Republican* this short excerpt—"Thus it will be seen that he has been a very active and useful citizen. He was public spirited, honorable, and a man of unblemished character. He owned a splendid Dental library and was a close student and reasoner along all lines. The simple record of his activities on earth affords the finest eulogy that can be offered by mortal man. His life is one that can always be held up as a model of usefulness and strict integrity, and the love for him on the part of the citizenship and the dental profession at large will not perish from memory."

Dr. Pritchett became a member of this society in the year 1877. Membership in any organization meant active participation in the work of that organization and the records of this society show how faithful he was to his chosen profession. From president down, he held many positions of trust and as we glance back over the past 36 years, covering the period that he mingled with the members of this society we find no act or word that gives cause for regret—but instead, a flood of memories that brighten the thoughts of all who were so fortunate as to have known him. I do not believe it is overstating the fact when I write that in his death, all who knew him lost a friend. A pleasing personality—a sturdy manhood—a character unmarred by excesses of any kind whatsoever—was supplemented by an unflagging interest in his life's chosen work. The very last years of his life were passed amidst his office duties and in his work with the State Board of Dental Examiners. Widely known as a capable prosthetist, he was none the less exacting of himself in all of the professional services that he rendered to an ever faithful clientele. The sincere regret caused by his death is tempered by the knowledge that he was spared beyond three score years and ten—that he lived a life full of blessings to himself and his neighbors.

These necessarily brief biographical sketches of the members of this Society, who have passed to the great beyond during the last year—seem to the members of your committee, who have become familiar with their careers, inadequate indeed.

Possessed of high ideals, they have acted well their parts in the great drama of human endeavor. Members of a profession the practice of which is full of arduous tasks—the record of their lives betrays no faltering in the crucial hour, but are replete with manifold duties faithfully and conscientiously performed. As an organization we honor ourselves by paying proper tribute to the dead. From their lives we may gather inspiration for the years we are permitted to succeed them. As their names are transferred from the list of the living active members to the never lessening list of the silent dead, it is wise to remember that each succeeding year will witness additions to those recorded only “In Memoriam.”

The line of demarkation between those still responding to the roll call here and those who have reached the unknown shore, is so slender that it is scarcely visible. We find no reason for separating the one from the other—rather would we prolong the memory so full of pleasing recollections of the years gone by. After almost half a century of the growth of good fellowship in this society, the friendships of yesterday are not so fleeting as to have been forgotten today.

Let us here record our appreciation of the many sterling qualities possessed by those we are today numbering with the dead and with a just estimate of the many virtues they possessed consecrate ourselves anew to higher ideals and a more faithful devotion to life's work. With faith supreme let us hope for those who have and those who are yet to cross the silent river that:

“When Earth's last picture is painted,
And the tubes are twisted and dried,
When the oldest colors have faded,
And the youngest critic has died,
We shall rest—and, faith, we shall need it—
Lie down for an eon or two
Till the Master of All Good Workmen
Shall set us to work anew!

"And those that were good shall be happy!
 They shall sit in a golden chair;
 They shall splash at a ten-league canvas
 With brushes of comet's hair;
 They shall find real saints to draw from—
 Magdalene, Peter and Paul;
 They shall work for an age at a sitting
 And never get tired at all!

"And only the Master shall praise us,
 And only the Master shall blame;
 And no one shall work for money,
 And no one shall work for fame;
 But each for the joy of the working,
 And each to his separate star,
 Shall draw the Thing as he sees it
 For the God of Things as They Are."

E. K. BLAIR,
 C. H. HURLBUT,
 A. F. JAMES.

REPORT OF LIBRARIAN OF THE ILLINOIS STATE DENTAL SOCIETY.

BY DR. I. B. JOHNSON, ONARGA, ILL.

The libraries located in the following cities are complete:

Alton.....	Dr. A. Don Stocker, Librarian
Bloomington.....	Dr. F. H. McIntosh, Librarian
Chester.....	Dr. L. B. Torrence, Librarian
Chicago College Dental Society.....	Dr. W. H. G. Logan
Chicago Dental Society.....	Dr. C. D. Coolidge, Librarian
Decatur.....	Dr. H. A. Vaughn, Librarian
Danville.....	Dr. Geo. C. McCann, Librarian
Dixon.....	Dr. Z. W. Moss, Librarian
Effingham.....	Dr. C. E. Bellchamber, Librarian
Elgin.....	Dr. G. B. Elliott, Librarian
Englewood Dental Society.....	Dr. W. E. Mason, Librarian
Galesburg.....	Dr. M. W. Olson, Librarian

Illinois Dental School.....	Dr. G. W. Dittmar, Librarian
Joliet.....	Dr. A. B. Patterson, Librarian
Monmouth.....	Dr. A. W. Glass, Librarian
Northwestern University Dental Society.....	Librarian
Paris.....	Dr. J. E. Adams, Librarian
Rockford.....	Dr. M. R. Harned, Librarian
Rock Island.....	Dr. A. H. McCandless, Librarian
Springfield.....	Dr. A. E. Converse, Librarian
Sterling.....	Dr. S. C. Sims, Librarian
Streator.....	Dr. W. E. Eddy, Librarian
Kankakee District.....	Dr. E. B. Creaxer, Librarian

There are enough journals on hand to complete the four incomplete libraries.

REPORT OF THE COMMITTEE ON LEGISLATION.*

BY DR. C. R. E. KOCH, CHICAGO.

To the Illinois State Dental Society:

Mr. President: Your committee on legislation begs leave to report that although the administration of the government of our state has been changed completely, there has thus far been no change made in the membership of the State Board of Dental Examiners. There are now several vacancies existing, by reason of some of the members of the Board having served beyond the time for which they were appointed.

Your committee have had several interviews with Governor Dunne, and have endeavored to present the relation of the State Board of Dental Examiners to the dental profession of this state, and of this country, and also toward the people of our commonwealth; and it gives us great pleasure to say that we were received with every courtesy and consideration.

The Governor asked for a written memorandum so that he might be able to refer to it at his convenience, which has been furnished. On behalf of the organized dental profession of the state, we have requested him to make the appointments that he

*Read before the Illinois State Dental Society.

may desire in such manner that a sufficient number of experienced men, with reference to the duties, precedents and laws governing their positions, as well as the intricacies of their administrative duties may always be retained. This is in compliance with the spirit and the letter of the law.

Your committee has made no recommendations for appointments to Governor Dunne, having decided to follow the methods employed by this committee during the past three administrations of the state government—that is, the services of the committee have been tendered to the governor, if he desires to avail himself of them, to inform him as to the professional suitableness of appointments that he may be considering. We are pleased to express our opinion here that the governor will treat this matter in a spirit of fairness, and while considering the political aspect, will not ignore the necessity of fitness otherwise of his appointees.

We further desire to present for the information of the society the advance which has been made in the standing of the dentists appointed to some of the state institutions. They have been put on a similar footing with the medical officers, and while we believe that the thanks of the dental profession are due to the Board of Administration of the State of Illinois, and especially to Dr. Frank P. Norbury, we also think it proper to especially commend the persistent and earnest effort of Dr. George A. Mills of Kankakee, who was the pioneer in this dental service in state institutions in our state. From recent correspondence carried on by Dr. Mills with institutional administrative officers of a number of leading states, we are convinced that our own state occupies preeminence in the care of the teeth of unfortunates living in state institutions.

We submit herewith General Orders No. 71, published by the Board of Administration under date of March 27th, 1913, which is the regulation adopted for the dental service in state institutions, and recommend that this be published with the proceedings of this meeting.

Very respectfully,

TRUMAN W. BROPHY,

G. WALTER DITTMAR,

CHARLES R. E. KOCH, Chairman,

Committee.

STATE OF ILLINOIS BOARD OF ADMINISTRATION.

Springfield, March 27, 1913.

Subject—Dentists.

General Orders

—No. 71—

General Orders No. 40 dated May 15, 1911, are hereby amended by striking out all of the paragraph relating to dentists, on page 7 of the printed copy of the orders and inserting in lieu thereof a paragraph as follows:

DENTISTS.

Where their whole time is given to the service of the state, the dentists shall receive from fifteen hundred dollars (\$1,500.00) to eighteen hundred dollars (\$1,800.00) per annum, with an increase from minimum to maximum at the rate of sixty dollars (\$60.00) at the end of each year of continuous service. Where a portion of their time is given to the service, compensation shall be a proportional part of the above rate.

In order to secure uniformity in dental work done by dentists at the institutions under the control of this board, and charges made for same, the following rules and regulations are hereby published for the guidance of all concerned.

The work to be that usual in the practice of dentistry, consisting of extracting, cleaning and all necessary treatments, amalgam and various cement fillings of the teeth, and repair of plates. All of this work to be given free to all cases, the same being service on an equal footing with that of the medical service.

Porcelain crown (anterior) will be given free to patients or inmates on the recommendation of the managing officer.

In the discretion of the managing officer, plate work, etc., may be done, free of cost, to patients or inmates who are performing service in the institution. A record of this service to be made and filed with the case record or official record of the patient or inmate.

Gold work and plate work, in all cases, will be charged for extra at the following prices:

Gold fillings	\$1.00
Gold crowns (incisors and bicuspid).....	2.25

Gold crowns for molars..... 2.50
 Bridge work at corresponding prices.

(Bridge work to be recommended only in exceptional cases.)

Plate work, per plate..... 3.50

(Excepting where gold clasps are used, when the extra cost for the clasps will be charged, the rates to be \$0.75 to \$1.00.)

In special work recommended by friends of the patient or inmate, the prices to be agreed upon as near the above prices as practicable. The managing officer will notify relatives, conservators or friends two weeks in advance of the proposed special work needed for the patient or inmate. If no reply is made to such recommendation the work will be done by the dentist in the same manner and with the same material as that given in the ordinary routine of service.

Relatives, conservators or friends of the patient or inmate are free to have dental service performed outside of the institution, but such work must be done at their own expense, and the charges for the same are to be regulated by the dentist doing the work.

The income received from all charges for dental work shall be paid to the managing officer who will receipt for same, and by him transmitted monthly as miscellaneous receipts to the state treasurer.

No work will be done by the dentist for employes excepting in emergencies, for which there will be no charge.

Dentists and internes employed by the month and giving full time between eight o'clock a. m. and five o'clock p. m. on each week day will not be allowed to practice dentistry, excepting for patients or inmates of the institution as herein provided.

No dentist will be allowed to receive fees or honorariums unless same are submitted to the state treasurer.

Records of the work performed by the dentist should be kept, properly classified, and a copy of the same transmitted monthly, addressed to the Alienist, Board of Administration.

Classification of work done to be as follows:

Name of patient and dates of service,

Number of patients examined,
Number of teeth extracted,
Number of teeth cleaned,
Number of teeth treated,
Number of roots filled,
Number of amalgam fillings,
Number of cement fillings,
Number of gold fillings,
Number of crowns, porcelain,
Number of crowns, gold,
Number of plates,
Summary of charges made for service,
Summary of free service,
Summary of expenses incurred, special,
Summary of expenses incurred, quarterly supplies.

General Orders No. 1, dated January 1, 1910, are hereby amended by striking out all of the paragraph on page 16 entitled, "Dentist and Dental Interne," and inserting in lieu thereof the following paragraph:

Under the direction of the managing officer or the assistant superintendent, the dentist shall have entire charge of the dental work for patients and inmates of the institution. It shall be his duty to make an examination as to the dental needs of each patient or inmate received, within five days after admission, and to make report of such examination in the form provided for the permanent record in the case history or official record. It shall be his duty, with the assistance of his interne, if one is provided, to faithfully carry out the dental procedures necessary for the comfort of the patients with special reference to conserving teeth that may be benefited by treatment and subsequent repairing. The hours of duty for the dentist and interne shall be from eight o'clock a. m. to five o'clock p. m. week days, and they shall be subject to call at any time by the managing officer or the assistant superintendent.

This order will become effective on April 1, 1913, subject to approval of the State Civil Service Commission.

BOARD OF ADMINISTRATION.

By B. R. BURROUGHS, Secretary.

PROCEEDINGS OF SOCIETIES.

THE AMERICAN DENTAL SOCIETY OF EUROPE, FOR- TIETH ANNUAL MEETING, FLORENCE, MARCH 21-24, 1913.

After the reading of the presidential address Dr. N. S. Jenkins (Dresden) said he had received the following communication from Dr. Brophy, written on the voyage over from New York, on which he (Dr. Jenkins) had the great pleasure to be one of the party; and Dr. Brophy requested him to present the communication to the society.

The communication was as follows:

D. "Berlin."
February 24th, 1913.
Off Algiers,
Mediterranean Sea.

To President Webster,
Amer. Dental Society Europe.

My dear Doctor,

By the kindness of Dr. Jenkins I send you a short communication for the meeting. I have asked Dr. Jenkins to read it to you.

Your friend,

TRUMAN W. BROPHY.

Mr. President and American Dental Society of Europe. Your letter received not long since informs me that the Florence meeting is to be devoted in part to Honorary members, and you request something from me, a letter or paper on some subject to be selected by myself. Surveying the domain of the dental profession, we endeavour to study its trend in its many branches, and to discover its weakness as well as its strength. The advancement of operative dentistry during the past decade has been marvellous. The improvement of inlay work, porcelain, and gold has made the arrest of dental caries more certain; it has reduced the discomfort of the patient during the operation to a minimum and it has, by reason of less fatigue to the dentist, contributed to his longevity. Besides, porcelain has dispelled unsightly disfigurements and made the esthetic possible. We hail with delight this advancement, but

we see the danger of too much concentration of thought on the technical manipulative side of our profession at the expense of a more careful persistent study of etiology, pathology, therapeutics, and surgery. We must give more thought to hygiene and prophylaxis. We must learn more about preventive dentistry. We must grow professionally, so that we may teach the world, that the present condition of the teeth of school children is a reflection on the intelligence of their parents. We must not be content with our beautiful artistic inlays, crowns, and bridges and our ability to arrest decay of teeth. We must not be satisfied with our attempts to purify a stream a long way from its source, but we must travel the rough difficult path which leads to its summit and there employ energetic, positive methods which will make its pollution impossible. May we not then by devoting more time and thought to teaching the public lessons in oral prophylaxis, contribute largely to the prevention of dental diseases and thus become instrumental in promoting health and serving the highest and best interests of humanity? Let us then study with more interest the causes of disease, for learning more of its causes we can more intelligently apply the remedy indicated to prevent disastrous results. May we not reasonably expect the dental profession in the next decade to teach the medical profession, and with its help teach the public that the teeth more than any other tissues of the body become diseased? That the mouth is the greatest center of infection and that this infection is largely due to diseased teeth? That the prevention of oral diseases will make internal medication often unnecessary? May we not by an international campaign of education teach parents that oral hygiene is essential to the health and physiological development of their children, so that within the next ten years the teeth of school children will show a marked improvement and the percent of diseased teeth be materially decreased? It gives me great pleasure to inform you that in America the better class of dentists are giving both money and time to the school children of parents whose circumstances make it impossible for them to compensate dentists for their services. I hope each of you may be so interested in the well-being of the poor children of the cities in which you live that you are, together with native members of the profession, giving part of your time to this most laudable and noble work.

My dear friends, I find I have made this letter much longer

than I intended when I began to write. One thought closely followed another and I have been led on. With my best wishes for your success in this meeting,

I am with fraternal love,

TRUMAN W. BROPHY.

DISCUSSION OF DR. MOORE'S PAPER, "ORTHODONTIA FOR THE BUSY DENTIST."

DR. W. DUNN (Florence):

Asked how Dr. Moore managed to get the crowns on with short teeth with a short bite. Personally he experienced great difficulty in getting the crowns to fit on children who were restive, so that it was utterly impossible to cut in between. He did not know whether Dr. Moore filed or separated.

DR. MOORE said he separated.

DR. W. A. SPRING (Dresden):

Said the members should be exceedingly grateful to the author for bringing forward a paper on orthodontia, a subject in which every practitioner ought to be interested. So many cases came to dentists, which could not as Dr. Moore said be referred to a specialist, because in many cases there were no specialists near enough. Dentists should talk more about orthodontia cases for the sake of familiarizing themselves with their diagnosis. Many cases came before their notice which had been mutilated, and where serious harm had been done. His own practice was to use a method similar to the Angle system, and he believed that fitting bands and placing arches are much easier done by the method of the specialists than many who have not watched the process supposed. Soldering with the little soldering lamp by the free hand method was a great help. He used platinum band material 35 American gauge, and found it very easy to pass between the teeth. The making of cuspid bands was much assisted by a little instrument which he would show those present. The band should be squeezed in front leaving the back open towards the tip, and after soldering should be squeezed from behind, all much simpler than by taking an impression and making in the old way. He also wished to refer to the apparatus made by Aderer of New York, for those interested in using arches. He made up in a metal, gold alloyed with platinum, an arch which had

a much more tender spring, but which did its work just as rapidly as the German silver arches, and had the advantage of being so cleanly. He desired in conclusion to ask the author one question. The results obtained by the author were very beautiful, but he could not understand how he was able with the Jackson crib to change the mesiodistal relationship, for instance, if on one side there was a normal mesio-distal relationship, and on the other the upper cuspid occludes mesially to the lower cuspid.

DR. H. J. MOORE:

In reply to Dr. Dunn, said that short teeth were very difficult to deal with. He ought when reading the paper to have handed round a sample of the metal which could generally be got in between; if not it was necessary to separate. If the teeth were very short, he took a model of them with a small seamless lead crown; he pushed that down over the molar tooth, cut the festoon of the gum; cut the top of the seamless lead crown off; packed it in with wax; had it cast in plaster, and in that way the form of the teeth was obtained so that the crown fitted very well, and no difficulty was experienced in cementing it on. In reply to Dr. Spring, he presumed he did not make himself quite clear in the remarks he made in the paper, namely, that with the appliance he had to use the rubber bands, exactly the same as with the Angle appliance. The second case that he referred to, that of his own boy, was evidently one of the cases that Dr. Spring found difficulty sometimes in managing. That was an abnormal mesio-distal relationship on the left side, the right side biting fairly well. The boy wore the case for about two and a half months; he put a fresh rubber band on every day, and the thing twisted round perfectly well as could be seen by the models. The boy was away in England and personally he had not to touch the thing. He thought if Dr. Spring would look at the three models with the rubber bands his difficulty would be overcome.

DISCUSSION OF DR. SOLBRIG'S PAPER, "ELTNER'S ANATOMICAL ARTICULATOR AND THE INCLINED PLANE ON FULL DENTURES."

DR. H. W. C. BÖDECKER:

In opening the discussion, thanked the author for the very able way in which he had placed the question of Eltner's planes before

the members. The author's demonstration had been so clear in regard to the making of models, especially large models, that all the members must have grasped the situation. Personally he had not had any experience on the subject, but in Germany considerable work was being done at the present time on such prosthetic work, and the successes that had been obtained were really marvellous. The gentleman with whom he was associated, Dr. Warnekros, was very much interested in the subject, and had a prize patient whom he had taken on exhibition to several cities in Germany. He had made plates similar to those shown by the author, and the patient had trained herself—it required training because at first she was not able to do it—to cut with her teeth the hardest tabloid chocolate, not quite half a centimetre thick. In order to show how much force had to be exerted to bite through the chocolate, anybody could take a sample and try it themselves. The patient could quite easily bite through one of the tabloids.

DR. H. L. SCHAFFNER (Florence):

Thought the author had solved a difficulty in regard to inclined planes of balancing the plates when the mouth was opened. He could quite conceive that it came in very usefully in that direction. How far anatomically it was correct he could not say, because the question of the adaptation of the teeth and the wearing of the teeth with the continual movements of the jaw had to be taken into consideration. One thing that struck him very much was that the inclined plane was not only posteriorly correct but in the lower jaw a very strong inclination would be found of the lower teeth inwardly and of the upper maxillary outwardly. He wondered whether that inclination of the two ranges of manibles, mesially and posteriorly, did not work in the same way in compensating the side motion which the author had referred to. He had been struck principally when he had been adjusting bridges and other artificial pieces with the obliquity of the teeth in the lower jaw particularly, and he had asked himself whether it was normal or whether it was exaggerated; was it the bringing together of the two mandibles in the deformation or was it normal? It was so marked that he had been led to think that there was none. He had heard very little said on the question of the obliquity of the horizontal surfaces of the jaws. The line was more marked than it would be, as the author had shown in the posterior third molar; and it seemed to him that

the obliquity of the lower jaw might play a very important part in the natural function in establishing the equilibrium they were seeking to obtain artificially. He had wondered whether it was normal or not normal, and what part it played in the function they were seeking to determine.

DR. W. S. DAVENPORT (Paris):

Thought the members owed a debt of gratitude to the author for bringing such an interesting subject before them, which he agreed with the President it was impossible to study too often if they desired to be successful dentists. Many had been enthusiastic in the use of the Bonwill and other articulators up to the present, and so far as he had had experience with the Eltner articulator he thought it was an advance in many points on other articulators, more from the point of view of the perfection of its construction than from its principles. It was a splendidly made appliance, which could not be said of many similar articles. The old Bonwill articulator after it had been used for several times was, in the hands of most men, out of alignment and the joints were loose. The inventor had made a decided advance in his apparatus in overcoming the great difficulty of preventing the upper teeth from falling. It was really surprising that dentists had not thought of that before. Probably they had thought of it but had not had the courage to place such a long plane in place of the third molar in the upper region. He imagined that, generally speaking, if anything hard came up against it in mastication it would drive the plate out of the mouth. He certainly intended to give the invention a thorough trial.

DR. O. SOLBRIG (Paris):

In reply confessed that he did not fully grasp the questions that Dr. Schaffner asked. If he understood him correctly Dr. Schaffner referred to the inclination of the teeth towards the inside of the lower jaw. If one of the models were examined it would be found that the planes were not straightforward and backward but very much inclined. The compensation was individual; it went in harmony with the articulation, and the individual compensation was found by measurement. It would be seen on one of the models that one plate was twisted on one side; it was not straightforward and backwards; it was simply exhibited to explain one part of the inclined plane. In reply to Dr. Davenport's remarks, the danger of pushing the plate forward was not as great as might be supposed.

Dr. Eltner used a crown to touch the lower plane. Personally he had used two little surfaces, but it was better to use only one surface and a wire on the top, because it was necessary for only one point to touch, and that one point might be a wire or it might be a crown. The lower only must be a surface on which that point could travel and prevent the plate from tipping. It might be thought that in biting on the plate it would be pushed forwards and out, but that was not the case. It acted more in the way of driving the plate into its place, and practice seemed to show that the plate was better retained and not pushed out. The question of inclined planes was a very difficult one, and one had to study it for a certain length of time, and if the members adopted the method he had suggested they would find their mechanical men would make a friend of it. But with all due respect to a good mechanician, it was necessary for the dentist to study it out himself and to show his mechanical man that it was possible, because he would get one side correct, but as soon as he started on the other side he found they would not go together, and it was necessary for both of them to do so. He soon discovered what the difficulty was and in a week or so corrected his method of procedure. Students in Germany were using it with perfect success; his brother who studied in Leipzig had to do that kind of work for his examination, so that he did not think the difficulty which existed should prevent the members from using it.

ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held March 11, 1913, with the President, Dr. C. S. Case, in the Chair.

DR. ELLIOT R. CARPENTER read a paper entitled "Why Inlay Bridges Fail."

DISCUSSION.

DR. F. E. ROACH:

I am free to admit that I hardly know how to discuss Dr. Carpenter's paper. I am fully in accord with his position in reference to why inlay bridges fail. I have taken a firm stand against the indiscriminate use of inlays as abutments for bridges. It was my belief early in the work, especially after the introduction of the casting process, that there would be a great many failures from this source and my observation has confirmed this. I am free to

confess, that under the fascination of this process, which simplified the construction of inlays, I was led to make a more extended use of inlays for abutments for bridges, and I am free also to admit that I have had some failures from this work.

There are reasons why these inlays do not hold. I do not believe I ever made an inlay or an abutment for a bridge that I had as little anchorage as some of these cases from Dr. Carpenter's morgue show, but it has been a surprise to me to see some of these failures from inlay abutments in cases where I have resorted to very large cavities, and also where I have resorted to what I consider a very strong supplementary pin anchorage. I have studied these things pretty closely, and I have come to the conclusion that owing to the rigidity of the inlay that the slight yield in teeth, if there is any considerable leverage, it is very, very difficult with any form of inlay to prevent eventually disintegration of the cement between the inlay and the tooth structure. I have noticed that this is also a condition that takes place under dowel crowns without bands. These are the observations I have made as the reasons for failure in conjunction with the points that were brought out by Dr. Carpenter. These things were explained from different sources. You will hear one individual say that the constant pounding or force causes the disintegration of the cement. I heard it stated today that it was necessary, if we expected success in our inlay abutments, that we should so construct the inlay that the force of the antagonizing teeth would be applied directly to the inlay and not to any part of the occlusal surface of the tooth that was used as an abutment, claiming that the rigidity of the bridge and the inlay being held at one end, we will say and the yielding tooth in its socket, the force was applied on the tooth itself and would drive the tooth into the socket away from the inlay. That was a theory offered today. It was one of the theories offered as a reason why these inlay abutments give way; but the explanation I have in my own mind for the failure of inlay abutments is the disintegration of the cement in the joints, and I would prefer, wherever it is possible, to make a hollow inlay, and of course that is only possible where there is a considerable sized cavity for use as an inlay abutment or inlay anchorage, making the inlay hollow so as to leave as large a bulk of cement underneath the inlay as possible. That, I am sure does not agree with the belief of many, for even with a large inlay they

prefer to have the cavity surface in contact with the inlay in preference to having a mass of cement intervene. My preference is for the hollow inlay, and I believe it is rarely ever possible to make an inlay anchorage for a bridge abutment without strong supplementary pin anchorage.

DR. GEORGE W. SCHWARTZ:

In regard to the paper of Dr. Carpenter, I have known for sometime that he was going to read a paper on this subject, and in standing before you this evening I cannot do much else than agree with the majority of the things that have been said in the paper as well as generally agreeing with what Dr. Roach has said. As a rule, I am not a fixed bridge man, but I have one or two salient points to state in reference to inlay bridges, but not as generally made. My expression of the matter would be that any inlay bridge, that does not have as much surface practically, or as deep a surface as the crown of the tooth, would not be sufficient to hold the bridge or to make the bridge stable. Therefore, if you go that far you get beyond the pulp, and you may as well devitalize the pulp and obtain that additional strength which the post gives. There is one thing I would like to say in reference to a fixed bridge made of inlays, provided you have sufficient tooth substance left to be strong, I think an inlay bridge made as this bridge has been described and read is better than the other method of inlay bridges, and also than is a bridge with crowns even where the teeth have been banded, for the reason I am just as much of a stickler for the surface that nature has given all around the gum line of the tooth as Dr. Johnson and Dr. Black are for contact points. No matter how carefully we may adapt our band, and how closely we may fit it, we cannot do quite as well for the patient as God has done. In making this kind of bridge you do get the advantage of the bridge without the disadvantage of the bands the other way. Generally speaking, I am a banding crown man when I have nothing else left to do, and then I do the best I can, because I think it is a proper method under these circumstances. But when I can get a fixed bridge of that description with enough tooth strength left, that the stress will not break away the enamel, so that by proper preparation I can fix my bridge in, then I think the inlay bridge with the pins in one of the root canals in each abutment gives me a ideal fixed bridge.

Dr. Carpenter brought out another point in his paper about the so-called pyorrheal teeth. Had I known in time anything about the nature of the paper, I would have brought along a little regulating appliance I made some years ago to show you. Dr. Case I think, has seen it. It is a double bar regulating appliance whereby I have regulated pyorrheal teeth and brought the roots to their proper positions. If I remember rightly, I brought it out before the Illinois State Dental Society some ten or twelve years ago. I should be pleased to show it before the society at any time if they so desire.

Dr. Carpenter emphasized a good point in reference to its use in making a fixed bridge where a molar is tipped; you can straighten that up, and where the patient has vitality enough left the tooth will come back to its normal use.

I wish to thank you for the courtesy extended to me this evening.

DR. S. F. DUNCAN, Joliet:

I am very glad to be here and to have heard Dr. Carpenter's paper, because Dr. Carpenter always gives us something that is very good.

The question of inlays for the support of bridges is one I think of great interest to us all, and we have all had our failures, and trials with them, but I still believe that an inlay in a properly shaped cavity, is one of the best anchorages we have for a fixed bridge, because of the fact that it does not interfere with the gums in any way, and usually can be made reasonably safe. We have all had our sad experiences with the shallow inlays for anchorages. I have had the same experience. I have lost a good many of them, and I have had trouble in my own mouth from a shallow inlay for a bridge attachment. A few years ago I had a bridge constructed with an inlay for one anchorage, made by one of the best men in the profession, but the inlay was too shallow. It would not stand. He tried it again and I still had trouble. Afterwards the molar, which had the inlay in it, had to have its pulp devitalized, and the inlay fitted with a post going into the distal root, and now it is all right, and for a number of years has given me great comfort. This was a lower molar that was somewhat loosened by incipient pyorrhea and tipped mesially. No effort was made in straightening it up. The bridge was put on in its tipped

position, and that molar is in better condition than before the bridge was attached to it.

I think the pins are perhaps the best anchorage we can have a great many times, but there are many of these inlays that are sufficiently anchored if we drop them to the bottom of the pulp chambers of molar teeth, if they are sufficiently large so that the cement has a large grasp upon the inlay as well as upon the cavity. In bicuspid teeth that is almost impracticable, and I think the post attachment is very essential.

I want to thank you again for the pleasure of being with you.

DR. C. N. JOHNSON:

I am reminded of a remark once made by Dr. Harlan, that "This is not the kind of water I am accustomed to swimming in very much," and still I have some ideas about this matter, and I have enjoyed Dr. Carpenter's paper very much. I am willing to subscribe to almost everything he has said. One very significant remark he made, but I do not suppose everybody caught it, was that in speaking of forcing a molar back into its normal place we should leave the appliance on six months before a bridge is applied. That is the best advice he gave in all the paper.

Speaking about pyorrheal teeth, I think our president particularly will recognize the important point that in those teeth that have a tendency toward looseness and pyorrhea, if a regulating appliance is placed on them and they are moved in the jaw, it is the best treatment they can have, and in many of the cases where the teeth have been drifting apart, the lower incisors particularly, if they are regulated and brought into alignment by some process of regulation, it will stimulate the circulation around these teeth and they are improved in condition. In this process of straightening up the molars we are following along good physiological lines, but I do not believe that it is always a very easy matter for one of these second molars to be put back into position again after it is tipped. It takes time to do it, but it is well worth the effort. I think we have made a mistake in our attempt to anchor bridges with inlay abutments, as has been illustrated here tonight, by making the cavity too shallow. I have made that mistake myself, and have had failures, and I have some bridges, that are being worn now that I expect to be failures. I am sorry for a man who

never makes a mistake because in the first place, he is a man who does not exist, and then if he does exist he is not progressing very fast. We must make mistakes in order to grow.

DR. LESTER BRYANT:

This is the first opportunity I have had to be with you, and I assure you I appreciate it very much.

I have enjoyed not only the paper of Dr. Carpenter, but also the discussions on it. I am a firm believer in inlays as anchorage for bridges, and I wish to say a few words in their favor. It is true, I have had a good many failures like others, but from these failures I have learned something, and I am going to try and tell you some of the things I have learned.

There has been a good deal said about shallow inlays. I would like to say that might be misleading. An inlay that goes clear down into the pulp chamber in a solid metal cast I do not believe good practice. It has been my experience that if the inlay is thicker at one point than it is at another, it is apt to cause shrinkage on the thin side. In other words, if you have a mesio-occlusal inlay, your occlusal surface should be about the thickness of the mesial surface of that filling; if the occlusal surface is thicker, you are more apt to have cervical shrinkage. I try to get my inlays of the same thickness all the way around even though I have to fill up with cement to get it. Then to have retention I drop a bit distally in that tooth; it must be in solid dentin. If it is not, it will not hold.

There is this much about posts I have found a post that has the same gauge in its entire length will hold as much as a post tapered twice its length. If I can get a good fit in there into good solid dentin, I am sure the filling is going to hold.

Another point I would like to bring out is with reference to extension for inlay abutments. Those buccal and lingual margins must be extended, so that there is good clearance between the attachment of the dummy and the filling. The margins must be extended out, so that food in playing over the bridge has a good chance to cleanse the margins. If it does not the margins are going to fail.

I should dislike to give up bridging inlay teeth if I had to devitalize every tooth I wanted to use as a abutment. I know I can get abutments in vital teeth if I can get the distal pit, and have it deep

enough without exposing the pulp of the tooth and without creating a great deal of pain.

I had a case not long ago where I had to remove a filling on account of it giving pain. In that case my contact was not enough. It was the same preparation. I thought I could knock that thing out with an instrument for knocking out inlays; I hit the tooth two or three taps, and knocked out the whole length of that fine sound tooth in trying to get the inlay out. If I make a filling that will hold as well as that, it will carry its end of the bridge.

With regard to the remarks of the essayist concerning pyorrhea, I heartily agree with him in moving the teeth back into place. Of course, affected with pyorrhea, where there is much movement you must have more retention than you would have in perfectly sound teeth in the jaw. But that is the secret of our success in pyorrhea, largely spanning those teeth together with our bridges.

DR. L. L. DAVIS:

In listening not only to the paper that has been read but to the discussion on it, it seems to me, that either this society is taking a backward step in the essay that has been read, or in the discussions within the last few months in this city and elsewhere, or else the author of the paper and those who have discussed it have taken a radical step in advance.

We have heard much of late about dental trouble from the foci of infection, and we have been advised invariably by everyone who has spoken on the subject not to devitalize the pulps of teeth, not to retain loose pyorrheal teeth, not to put posts down into good healthy teeth. In other words, the worst thing we can possibly do is to devitalize a tooth and put a root filling in a good healthy tooth. This has gone on to such an extent now from what I have heard in the last six months that I hesitate whether to make a bridge or pull the tooth out. There is a scare going around the town. There is one thing I am assured of however, that the talk I have heard in the last six months has not affected in any way my method of practice. There is no doubt but what occasionally teeth that have been improperly filled may be the source of infection. There seems to be a general furor about dental foci of infection, and it has taken hold of everyone who treats pyorrhea or who puts on a bridge. One has to keep quiet for fear that he may be criticised harshly, or else one has

to take upon himself the responsibility of extracting all these teeth hereafter.

From what the essayist has said this evening, I gather that he is a firm believer in the use of iridio-platinum posts and the devitalization of the pulps of teeth for useful anchorages for all inlay abutments. With that I heartily agree.

Like others, I have met with failures from the use of the shallow inlay. I want to say one thing while we are on the subject of posts and inlays for abutments. Within the last month I have had occasion to remove a bridge that I put in some two years ago. There was a shell crown on a good firm third molar, at one end of the bridge. At the other end there was a post and inlay in a second bicuspid. For some reason the shell crown became loose, and I tried to remove that inlay delicately, putting sufficient stress underneath to remove it without any fracture, but finally I became desperate, gave it a tap, and just as Dr. Bryant has said, I not only removed the inlay, but removed one-half of the cusp of the bicuspid, and I had to resort to a crown to support that, so that it shows an inlay abutment is a good fixture and a good substantial anchorage for a bridge with a post.

With reference to the size of the post, Dr. Bryant made the statement that if the post is not tapered he can get the same amount of retention with half the length. I hardly think that is possible. If you want a firm attachment, you have got to sink the post at least to the depth of the crown of that tooth in order to get stability. If you do not go at least the full depth of the length of the crown, you have not got proper support for your bridge. That is one thing above all others to bear in mind.

As to the leverage, if you have got a post which is just one-half the length of the crown, then you have got lateral stress upon that one-half; you have got twice the amount of leverage you would have if you had sunk that to its proper depth, and then you distribute the leverage equally between the crown and the post. That is my opinion.

In regard to anchoring teeth that are loose from pyorrhea, I think the suggestion of Dr. Carpenter is one of the best that has been made in regard to forcing the teeth back into proper position. I have not taken six months as he has mentioned, but on a number of occasions I have resorted to a method of my

own for the forcing of teeth apart, and in so doing have used piano wire spring. Suppose it is a molar you want to throw into position, and the bicuspid and all the anterior teeth are in proper position, by taking a piece of piano wire and bending it, so that one part rests against the neck firmly, and carrying it down along the gum line, bringing it back so as to rest against the neck of the molar carrying it, and bringing it up to the other one and soldering it with soft solder and a little German silver jacket to make a joint, you can get a perfect one-piece spring. By taking that out from time to time and bending it more, springing it, straightening that loop, which you have dropping down on the other side of the gum, you can throw the molar right up straight again, without the use of a jack screw. I have done that. Make sure that the piano wire is against the bicuspid and against the molar in the other, and allowing the spring to be on either side absolutely in a line with the direction in which you move it, and all you do is to draw that together, straighten it out a little more, and snap it back into place. You can throw it into position very quickly. I do not know whether that has been done before or not, but I have been doing it for quite a little while, especially where I want to attach a bridge to teeth that are loosened from pyorrhea, putting them in proper positions first, having treated the roots, and with the teeth in proper position the whole thing seems to heal and get in perfect shape, so that by the time you put a crown on the tooth or an inlay, whatever it may be, conditions are all in your favor for a good result.

DR. J. G. REID:

It is hardly necessary for me to say that I have enjoyed this paper very much and the remarks that have been made on it. I have not had any failures in bridges so far, because I do not make such an enormous lot of them. I am afraid to do so. I still believe that it is a great mistake to anchor bridges in the mouth to any extent with inlay abutments, and by extent I mean having a bridge run from a third molar to a first bicuspid or cuspid. This is done I know. We all make a failure of that sort of business, the best of us. We are only temporizers with anything we do. We need not be over enthusiastic about anything we do in dentistry. Mind you, I am not getting pessimistic when I say that, but am getting down to brass tacks. I believe, and I think

you will agree with me, the smaller our bridges are, the more successful they are, and that when we go to making bridges with crowns for abutments, we have failures just the same as we do if we make them with inlays. They are only temporary affairs, and yet we talk of them as though they were everlasting. They come out in a short time anyway, some of them in five or six years, and some of them a little longer. I can probably make an inlay abutment that will last as long as I have expected it would last with anything when it comes to making bridges, and I do not know but what, after all, where there is any extensive bridge work to be done, it is better to make them with a plate.

DR. ROYCE:

Would you like to wear it?

DR. REID:

I would enjoy wearing it as compared with some of the work I see in the patients mouths. Dr. Bryant brought out one very excellent point which I have observed with inlay abutments, namely, that you have got to have "extension for prevention" to the full length. You have got to carry the buccal walls lingually for the cavity to have this self-cleansing surface. It is a very grave mistake to make an inlay attachment unless that is done. It is just as certain to fail as can be. The weakest point is the cement proposition especially an inlay bridge, with inlay abutments. Unless you can get a sufficient amount of cement in some way or other to prevent disintegration, it will come out in spite of anything you can do. I have had it happen in half a dozen cases to my extreme sorrow and regret. I have had to remove them and rebuild them, and it will do that where there is any hard mastication, but especially where you depend upon the mastication largely with a bridge it will invariably fail. That is the experience I have had in it and we have got to admit it. They will last probably three or four years, and then they have got to be made over. I do not care whether you anchor them with pins or not, the same condition prevails. If the line of cement is very thin, it must be the impact of that position which does it. It cannot be anything else. If there is accurate adaptation of the inlay to the cavity, the line of cement is so thin that it is simply hammered out. I have seen too many instances of this to be convinced otherwise, and it does not take very many cases to prove the fallaciousness

of it at least, and you cannot depend upon that sort of proposition.

I have done some foolish things experimentally. Not long ago I anchored one to a third molar, and it was a substantial third molar, and one to a second bicuspid. I did not want to devitalize the pulp of the third molar. I do not want to devitalize the pulps of teeth if I can help it, but if I can put an apparatus on a tooth and have got a good solid third molar, I do not hesitate to do so. As an illustration, I have made half a cap over the top of the molar, and also made an inlay attachment inside and simply covered the cap down over the molar to the tooth as an aid in the anchorage. It gives me good anchorage, and it is absolutely clean. It is as clean as anything can be, and makes a good strong attachment to the third molar, and it will do the same thing with a bicuspid if you want it.

I hope you get the idea of what I am trying to get at. The other point Dr. Bryant made is getting a pit into the molar or bicuspid. Supposing you have got a good second bicuspid for an inlay, if you depend upon the fit mesially, which you can do, you get a good nice firm anchorage, but I think it is my idea that I could do better if I only encased the top of that tooth.

Dr. Johnson spoke of the relation to the occlusion of the teeth. If a bridge has been constructed so that the occlusion is uniform from the molar to bicuspid, I know how difficult that is. It is a mighty nice thing to be able to adjust a bridge so as to have a good occlusion from a second bicuspid to a third molar or even a second molar. Theoretically it is the right thing to do, but practically we do not do it. When that is not done, we have got a condition that will further destroy the usefulness of the bridge.

I believe in making bridges to a certain extent, but I do not believe in making bridges for everything that comes along. I make them occasionally and as well as I know how, and then if I have something to contend with that I do not like or does not look good, then I tell the patient I will make it over. We ought to be honest with ourselves when we are doing things for our patients and not mislead them as to what the results of a bridge are going to be, because it is an uncertain proposition. That has been

my experience for twenty-five years, that bridge work is an uncertain proposition with any dentist.

I have had failures, and I am willing to admit it. Even though we meet with the same conditions, we cannot hope to have anything in the shape of bridge work that is going to last many, many years. If we can get a few years of usefulness out of it, we can feel that we have done some good.

DR. E. A. ROYCE:

Like the rest of you, I have enjoyed this paper very much.

The points that have been given us tonight, give us a chance for improvement.

There was one point Dr. Bryant spoke of in reference to the use of posts that I wish to refer to, and it is one that is not fully appreciated by the profession generally, namely, what a difference a little taper in the post makes.

While it is far from dentistry to engineering, we are talking about bridges, and the remarks I have to make in that connection I think are opportune. One of my friends is in the business of pile driving. In making floating foundations for buildings, you will notice they put down very long timbers or piles, and it is the experience of men who are in this business that if they can put down a timber or pile that is gradually tapered from one end to the other, the support of the building is very much greater with the same size pile, so that in their work where they use concrete they make a gradual taper from the butt to the point and are able to reduce the length of the pile, and get a greater resisting quality in that pile than they could with an ordinary wooden pile, with approximately parallel sides.

Of course the difference in resistance in withdrawing a pin with taper or parallel sides would not be as marked as in the example cited, but one can readily see that the taper pin when started even slightly from its seat, loses all resisting force and if the surface is smooth there will be little if any frictional resistance to removal—merely the adhesive force of the surrounding substance, while with parallel sides there will be frictional resistance along the whole surface of the pin, and experience has shown that this difference is enough to make the pin with parallel sides much the better support for a crown when it can be used.

DR. J. H. WOOLLEY:

I feel more sure with crowns than I do with inlays. Not many years ago there was a habit with some dentists in discovering a loose tooth in connection with another one that was decayed to fill the decayed tooth and the adjoining one together with amalgam, thinking the loose tooth would be made stationary by the contact of the two fillings. In time one or the other of those teeth failed because the movement of the teeth independently of one another was gradually taking place. Now, it seems to me the same way, with the movement of the abutment, be it of an inlay or something else, the tendency of that movement, seemingly unconscious, is to cause a loosening of the inlay, and I have seen many inlays loosened, and I could only account for it in that way, the inlays having been anchored as securely as possible in a mechanical way according to the laws of physics. And then again, in regard to inlays, where you have made a larger inlay to get a surface, where the walls of the tooth have been proportionately thin, there is danger of the breaking of those walls.

DR. J. E. HINKINS:

I have listened to the paper with great interest, and was particularly interested in that part pertaining to pyorrheal teeth. I do not believe there is any department in dentistry that is more abused than bridge work. When God created man and woman he created every organ to perform a specific function, and it is to me a mistake to expect a bridge resting on but two teeth to do the work of four and six teeth. It will not do so very long. I am not a very enthusiastic bridge man, althought I have put in quite a few bridges during my professional career. At one time in my life I worked on bridge building and I was taught the resistance of force and power, etc., in abutments. I have never had a bridge come out, with an inlay abutment, because I never put one in. If I should practice dentistry a hundred years, I never expect to put one in. The instruction I received was to the effect that all bridges must have a right angle for resistance in the abutment, and you cannot put an inlay in a tooth and have it at right angles, and just as soon as you talk about obtuse angles, you are reducing the resisting power. If I have any bridges put on, I will have crown attachments, as I would rather take a chance with a crown than with an inlay. In the devitalization of a tooth

you lose a certain amount of the elasticity in the pulpless tooth which you have got in a live tooth, and I have never been able to find space for a bridge where I could prepare my inlays and make them at right angles, so they would go in and set at right angles. I have never seen a case where I could prepare it in that way. I do not prepare my cavities like that for inlays because space will not permit of it.

Furthermore, I am a little chary of inlay abutments for bridges on account of the cement, which is one of the weakest things in the whole problem. In chemistry we have to do with what we call phosphorescence, and in the phosphoric radicles we have three different phosphoric acid radicles, that are acted on by heat, etc., and in the tooth we are likely to get disintegration of the cement. I do not think any of you have ever mixed cement so that it would spread and lay flat. It would congeal in an oval form, and if you mix the cement thin enough to press the inlay in, you are mixing three to six per cent more acid than you should to have good cement. When you use an inlay you have got three to six per cent of phosphoric acid, and with the foci of infection and ferments going on and the organic acids, and the volatile acids, wherever they come in contact with the action of bacteria, the cement is washed out and you have got nothing to hold the inlay there. If you can make the cement of the same consistency as you would put in a filling, you would get better success with inlay abutments. We cannot do that and get the inlay to place.

DR. C. S. CASE:

I wish to compliment Dr. Carpenter upon his very fine paper. He and others have lightly mentioned one phase of this subject which I wish to emphasize: I refer to the slight but forcible movement of teeth under the stress of mastication. I consider it important that the occlusal surfaces of the bridge be so adjusted that the teeth will exert as little lateral stress as possible. The seating of the inlays should be firm and strong and forces of mastication be brought evenly and squarely upon the bridge so as to drive them to place rather than out of place. Any lateral stress caused by the teeth striking on one side or the other of a straight line between the piers, or by striking a diagonal surface with a shearing movement, must soon loosen the inlay. In my opinion the various forces of mastication should be considered the prime

influence of failure to be skillfully guarded against by mechanical construction and adjustment of occlusal surfaces.

In regard to the movement of loosened pyorrhea teeth, or of teeth that have drifted into an inclined position, and which you wish to straighten up, to use for abutments, there is no possible objection or difficulty in moving them, providing the patient is not too old. One of the surest and most satisfactory ways is to make firm attachments to the teeth or roots to be moved, by cemented bands if possible, to which proper attachments are soldered for the application of a positive screw force. The importance of this kind of force in cases of this character especially, is the advantage of being able to regulate the magnitude and frequency of application. A kind of apparatus also which sustains the tooth firmly in its socket while it is being moved in physiological periods of work and rest, a method of movement moreover, which is not possible with any kind of continuous spring force. The difference between these two kinds of forces for the movement of teeth, is not so important for young patients, but after adolescence, and especially in sluggish or diseased activities of the periodontal membranes the sustained positive method of movement must appeal to everyone who considers its advantages.

As pointed out in a paper which I read before this society several years ago, the rigidity of the grasp and positive application of force with alternate periods of rest, is particularly applicable for the movement of pyorrhea teeth. If the calculi is first carefully and thoroughly removed, I feel assured from many cases in my own practice that the peculiar stimulation of dormant activities which arises from this method of movement renders it one of the most potent of all the factors of treatment in restoring the diseased tissues to health, and which in some instances has resulted in a surprising proliferation and restoration of alveolar tissue.

DR. F. E. ROACH:

Let me say a word in defense of the post with equal diminution from the crown to the end of the post and in support of the position taken by Dr. Bryant, contradicting rather the position taken by Dr. Royce in regard to the tapered post. I am a believer myself in a post of uniform size. There is a difference, a very marked difference in Dr. Royce's illustration. I do not think it is a parallel condition. The caisson which serves as a foundation for a building has to resist the width of the building, and by having the

caisson tapered the resistance of the weight is materially increased by the taper over that of the straight or parallel wall. We have identically the reverse resistance in a crown. We want a crown anchored to resist displacement from the other way. The more nearly the post parallels these walls, the greater will be the frictional resistance. It is the frictional resistance that supplements the cement adhesion.

DR. CARPENTER (closing):

I appreciate very much the courtesy of your discussion. I did not go into the technic of making pins I simply discussed the principle of using pins in conjunction with inlays.

In answer to Dr. Hinkin's comment, I would like to ask him if he would not consider it more or less a right angle between the abutment there from the proximal across the occlusal, and down again on the pin? That was one of the points I especially made.

DR. HINKINS:

I would call it an obtuse angle.

DR. CARPENTER:

I think that is splitting hairs in a small work of this kind, and it is not a parallel case to compare it with an engineering piece of work. Let that be as it may, there is one thing in regard to the making of pins, as I personally see it, and that is where it is possible, in sinking holes for the reception of pins they are invariably made on the gauge bevel absolutely. The pins before they are inserted, are put in a lathe and turned down with a coarse file and after the pin has been filed down to the right taper it is tried into the root canal, and should fit fairly snug, and I believe you have an equally strong attachment, if the pin is accurately beveled to the root canal, with a slight corrugation all around it, and it has a better chance of being driven clear to its seat.

There is another thing regarding the use of a post of parallel sides, or of the same caliber which must be remembered, and that is as you drive it downward to the root, the root canal being tapered also, you are apt to weaken the root and it is dangerous to put a pin of the same caliber very deep in a root as you are liable to drill through the side of the root.

I had the same trouble in some cases that Dr. Bryant spoke of in removing inlays and I believe that in some cases fracture of

the tooth in removing an inlay can be obviated if a groove is drilled through the proximal surface of the inlay itself, before using the inlay remover for reverse hammer.

In regard to the disintegration of cement from the impact in mastication, theoretically it is pretty, but personally I do not take much stock in it, for the reason that, in the first place, you have a cushion underneath each one of the roots, the alveolar process, which takes up the shock of the impact, it is put there for that purpose. Another point: every bit of that weaving is done distally on the bridge. If the occlusion is approximately correct, after the bridge is built and set, you have also a compensating weaving abutment.

In regard to the use of bridges in the mouth in general, I would like to answer the comment made by one of the members, that it was asking too much to expect two teeth to do the work of four, by saying that nature is always kind, and if we lose one or more parts of our body nature hastens to make more keen some organ in the body to take the place of the lost member. For instance, if you lose the sight of one eye, vision in the other eye becomes more acute. If you lose the sight of both eyes or the hearing, feeling becomes more acute at once, so that I hardly think the case cited is a parallel one.

DR. ROYCE:

I would like to ask a question. I do not intend to discuss the subject because I am practically out of inlay work. Excepting for experimental purposes, I have made very few inlays, but in this sample shown us, it seems to me there is too much stress put upon the inlay and not enough upon the post which is carried by the inlay. The principal object of the inlay in this case is simply to carry the posts which support the bridge. A simple inlay is a poor thing to attach dentures to. The post seems to be the saving feature of this particular inlay rather than the inlay itself, or is that a part of the true inlay?

DR. CARPENTER:

It is a part of the true inlay that anchors itself to its seat and is marginally beveled.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

NATIONAL DENTAL SCIENTIFIC FOUNDATION AND RESEARCH COMMISSION.

The success attained by the Scientific Foundation Fund Committee in securing money for a Foundation Fund for Research and of the free use of many thoroughly equipped research laboratories was so great that the House of Delegates of the National Dental Association at Kansas City, by unanimous vote, changed its constitution to provide for a commission of twenty-five men to immediately put in operation the plan of that committee for supporting and establishing exhaustive research, and for securing endowments for a National Dental Research Institute.

The constitution as adopted provides that not more than two members of the commission can reside in any one state. The commission and its officers as elected were: Weston A. Price, Cleveland, O., chairman; Thomas P. Hinman, Atlanta, Ga., vice-chairman; Clarence J. Grieves, Baltimore, Md., secretary-treasurer; John V. Conzett, Dubuque, Iowa, member of executive committee; Eugene R. Warner, Denver, Col., member of executive committee; Edward C. Kirk, Philadelphia; William Carr, New York City; Truman W. Brophy, Chicago; G. V. Black, Chicago; M. H. Fletcher, Cincinnati; Thomas P. Hartzell, Minneapolis; Arthur R. Melendy, Knoxville; Edward S. Gaylord, New Haven; Henry C. Ferris, New York City; Charles C. Allen, Kansas City; Frank O. Hetrick, Ottawa, Kan.; Marcus L. Ward, Ann Arbor, Mich.; Frank L. Platt, San Francisco; C. S. Van Horn, Bloomsburg, Pa.; R. H.

Volland, Iowa City, Iowa; C. M. McCauley, Abilene, Tex.; George E. Hunt, Indianapolis; Eugene Smith, Boston; J. E. Chase, Ocala, Fla.; Samuel H. McAfee, New Orleans. Ex officio members, Homer C. Brown, Columbus, O., president of National Dental Association; Otto U. King, Indianapolis, Ind., secretary National Dental Association. The plan developed by the Foundation Committee was adopted, viz., to raise funds from three sources, first, from the members of the dental profession to start the work; second, a popular fund from the laity, to be obtained largely by the activity of the members of the dental profession; third, an endowment fund to make the work permanent. The Foundation Committee has already secured contributions exceeding fifteen thousand dollars in signed individual pledges covering a period of five years, or three thousand dollars per year. The Commission has decided that the need for immediately assisting dental and oral research is so great that they will begin work at once by aiding some of the men who are already voluntarily devoting a part of their time to dental research and doing excellent work.

This will be done up to the amount of money already available. These contracts for the present will be limited to a total of \$4,000 for one year.

Literature and subscription blanks and directions will be furnished by writing the chairman, Dr. Weston A. Price, 10406 Euclid avenue, Cleveland, O.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS. ANOTHER VACATION STORY.

(Continued from the July issue.)

AROUND SYDNEY.

On my way over when we arrived at Auckland, New Zealand I received a letter from the Hon. Secretary of the Dental Council of New South Wales, Dr. Arthur L. Lyell of Sydney, stating that the Council wished to organize a dinner in my honor on my return from Brisbane. This Council represents the Odontological Society of New South Wales, The University of Sydney Dental Graduates

Association, and the New South Wales Society of Dental Graduates. The president is Dr. R. Fairfax Reading of Sydney. I was naturally complimented by the honor and was proud to accept the invitation, so accordingly Wednesday, July 17, was set for the date. It was very short notice for the members, my stay being so limited, and how the officers accomplished what they did in the time at their disposal is more than I can understand. The cover of the menu card was decorated with a cut in colors of the Union Jack and Stars and Stripes intertwined, and the banquet hall was draped with the American flag. For lack of space I cannot give a detailed account of the dinner, but must mention the fact that there were toasts to the King, the President of the United States, and the Guest. In proposing the latter toast Dr. Percy A. Ash, the honored editor of the *Commonwealth Dental Review*, nearly put me out of commission by the warmth of his remarks, and the deed was completed by Mr. Charles Hall in seconding the toast. I am thoroughly ashamed of the speech I made that night, but I couldn't help it. So many beautiful things had been said of me in Australia that when I arose with the din of applause in my ears and thought of the number of miles I was away from home and the warm hearted welcome I was receiving from men I had never met before I was too much overcome with sentiment to do myself justice. But the audience was very charitable with me, and I am sure forgave me.

A very pleasing feature of the evening was some singing by one of the members, Mr. Fred Crouch, who has a splendid voice, and some violin music by another, Mr. Charles Smith, whose instrument consisted of an improvised affair made by himself from a broom handle and an old kerosene can. I have never been so astonished as I was when I listened to the music that man could extract from that instrument. He would make a hit on any stage. Altogether we had a most delightful evening, and I believe it made a better man of me.

Bright and early the next morning we were off on the train for the famous Jenolan Caves in the Blue Mountains, about 100 miles from Sydney. We were the guests on this trip of Drs. E. R. Magnus and Alfred Burne of Sydney, and before I go any further I must say something in particular about those two men. Dr. Magnus was formerly a New Yorker but has been practicing in Sydney about twenty-four years. Dr. Burne has been in Australia

nearly all his life but has often been to the United States, as I have previously stated. I am going to solemnly warn my American friends against those men, because if they ever find out that an American reaches the Australian shores they immediately capture him and entertain him within an inch of his life. I never saw such whole-hearted devotion to the comfort of guests as these men display, and as I write these lines many and many a mile away from "Sunny New South Wales" my mind goes back in fond remembrance and infinite gratitude for the delightful hours we spent in their presence.

But I came nearly offending Dr. Magnus the morning we started for the caves. We were to take the train up to Mount Victoria, about seventy or eighty miles, and motor from there to the caves, thirty-six miles further, and after viewing the caves, motor back. It was about a three days' trip, and it occurred to me that with my family of four it was rather too expensive a journey to accept entirely from men one of whom I had never met before. So I approached Dr. Magnus with the remark that I should like to be permitted to contribute my share of the expense. He looked me straight in the eye for one moment and then simply asked the question: "Will you be kind enough to remember the name of the country from which you come?" I subsided meekly and settled down to the full enjoyment of the trip, except that when Dr. Burne heard of it later he nearly took my head off between my epiglottis and my clavicle.

The journey up the mountain that bright winter morning was glorious, and we reached the hotel at Mount Victoria in time for luncheon. The ride in the afternoon in those two automobiles—Italian cars, and splendid machines they were—was really the rarest treat I experienced in Australia. To break away from my strenuous professional engagements and get out into nature's open air among the mountains and indulge in the one sport which to me is most captivating—motoring—was like a breath of heaven itself. Such roads I have seldom seen, laid out first in the old convict days when the labor question was not so acute as it is in Australia today, and kept up in perfect repair, they are a joy to the motorist. They wind around the mountain sides in the most wondrous way and constantly reveal to view new scenes which are ever interesting. "There goes a kangaroo!" exclaimed the Mater, as we were

passing through some broken timber. I looked and saw an ungainly kind of animal loping off into the bush. It proved to be not a kangaroo but an animal somewhat similar—the wallaby, with short fore legs and powerful hind legs and tail. These animals we found were quite plentiful in this region and were to us very interesting.

Speaking of animals reminds me of a typical sight we saw on this trip. At certain intervals we noticed suspended on poles beside the road an immense bag at least twelve feet long and tied at both ends. On inquiry we learned that these were filled with rabbits, they having been shot and placed there for some one to come along and gather up for the market. Rabbits, as every one knows, are a great pest in Australia and we saw them everywhere.

Some of the sights from these drives along the mountain sides were very wonderful. Darwin has written of the Blue Mountain Valleys as follows: "It is not easy to conceive a more magnificent spectacle than is presented to a person walking on the Summit-plains when, without any notice, he arrives at the brink of one of these cliffs, which are so perpendicular that he can strike with a stone the trees growing at a depth of between 1,000 or 1,500 feet below him. On both sides he sees headland beyond headland of the receding line of cliffs, and on the opposite side of the valley, often at a distance of several miles, he beholds another line rising up to the same height with that on which he stands, and formed of the same horizontal strata of pale sandstone."

Imagine if you can riding along the edge of one of these same cliffs near the top and looking out from the automobile over the side and seeing below nearly a sheer drop of about 1,500 or 2,000 feet! Never in my whole life did I so much wish to have hold of the wheel of a car as I did that one. Of course, I am quite sure that the driver, who was really an expert, could handle the car better than I, and yet to a man who has run a car some himself, and who has his family's safety to think of, there is never so perfect a sense of security when anyone else is at the wheel. In all my touring when driving my own car I have never experienced a moment's uneasiness, and this spoils a man utterly for enjoying a car with some one else at the wheel, particularly in a tight place. But of course we arrived safely and the run for the last six miles down the mountain side to the caves I shall never forget. The

driver told me there was a drop of 2,000 feet in that distance, and it was a wonderful experience winding around the steep grades and dipping down and ever down till we swung at last across a bridge and with a curve went directly under the mountain through a natural arched opening and reached the Caves House, a beautiful and artistic hotel, where we were to remain over night. The hotel is conveniently located near the entrances to the caves, and after supper we made an inspection of one cave, aided by a guide and furnished with candles to light us over the difficult places. The



The Caves House.

caves are equipped with electric lights which can be switched on and off in sections by the guide, and yet there are places where the candles are very necessary. In addition to this the guide carried a magnesium light for occasional concentration on some particular object of interest. The effect of these lights on the crystalline formations in the caves is most wonderful, and we passed from one glory to another till our eyes were surfeited with the sight. The drippings of century upon century through the mountain walls have created some of the most grotesque of crystalline forms, and these forms present themselves either in stalactites or stalagmites.

of various shapes—sometimes a stalactite joining a stalagmite to form a continuous colonade from floor to roof. These colonades



Stalactite Formations, Jenolan Caves.

are varied in size and shape, and according to the most accurate estimate the length of time consumed in their formation is prodigious. There is one column fourteen feet high and two feet

thick which scientists claim required 13,000,000 years to form. It shows the patience of mother nature. To work at that little bit of



The Shawls, Jenolan Caves.

statuary for so many million years is staggering to think of, and it teaches us a much needed lesson in perseverance. There has been discovered in another cave which is not yet open to inspection one

colonade forty-five feet high and seven feet thick, so clear and transparent that a light placed on one side of it shows through. Think of the length of time it took to form this immense crystalline mass, and think of the uniformity of the quality of work which kept the slowly forming crystals so clear throughout. It is wholly beyond man's conception to take in the wondrous significance of these phenomena.

In other places the clearness of the crystals has been interfered with in a way to create new beauties. For some millions of years



Nellie's Grotto, Jenolan Caves.

the water has seeped through the mountain wall and left a thin sheet-like formation of white alabaster, and then for a few million years more the forming crystals have been stained by some mineral deposit in the earth, so that a streak of reddish brown has been formed, and this in turn has been supplanted by the white crystals again, etc. The result is a beautiful variegated banner standing out from the side of the cave, so thin that, as the light is held on one side of it the banner looks almost transparent. These formations are called "The Shawls," and they are really very wonderful.

The crystalline formations take various and grotesque shapes

and have significant names given to them which the guide explains. For instance, there is the "Crystal Palace," "Nellie's Grotto," "Crystal Cities or Fortifications," "The Show-Room," etc. In the bottom of one cave there is a river and at one place a deep pool in the bed of which can be seen great heaps of coins. The explanation is this: There is a small post in the bottom with a flat top, and there is a standing offer for any one who will throw a coin on the post to have that coin multiplied many times. Of course every one tries the trick and equally of course it is seldom or never that any one wins. The pool appears to be only about eighteen inches deep when it is in reality nearer six feet, and the coins have a peculiar habit of weaving back and forth and landing almost any place except on the post. Once or twice a year the coins are removed from the pool and devoted to a hospital fund, which has led to the name "Hospital Pool."

After marveling at the wonders of the cave till our adjectives had been worn threadbare, and walking and climbing till we were willing to quit for the night, we finally emerged from the cave far up the mountain side and followed a zig-zag path down to the hotel. In the morning we were out bright and early inspecting other caves, and by noon were absolutely surfeited with seeing. A message had come up to the Caves House from the Government Tourist Bureau at Sydney, telling the authorities at the caves that "Dr. Johnson and his family from Chicago are at the caves," and instructing them to give us special inspections through the most interesting caves. This was done because we were tourists from America, and because it is typical of Australians to show every courtesy to visitors—particularly to those coming from the United States.

But we had seen all we could digest, and decided that we must return to Sydney. It was very cold up in the mountains and we had difficulty in keeping comfortable. While the climate is not so severe in Australia as it is in America, yet we were there in their midwinter—July and August—and the sun was too busy up in the northern hemisphere making it hot for the people of Chicago and New York to take much notice of New South Wales. Coupled with this is the fact that the hotels in Australia are seldom heated and it creates a condition not conducive to comfort for travelers. The Caves House and the hotel at Mount Victoria are most excel-

lent in every way except in the matter of uniform heat throughout. But the lack of heating facilities is characteristic of all hotels there. No such thing as a general heating plant is thought of, and in some cases there is not even a fireplace in the rooms. No one who has not encountered this sort of thing can have any conception of the discomfort entailed by it. It is not only that the air is cold but everything about the hotel becomes chilled through. You cannot touch a piece of furniture without receiving a chilly shock. In one of the largest and busiest hotels in Australia there is absolutely no provision for heat in the dining room, and the guests come in and sit and shiver—yes, and many of them drink liquor to keep warm. In my heart of hearts I do not know that I could blame a man or woman for drinking whisky in an Australian hotel in winter, and I am not sure that it might not be a notable contribution to the cause of temperance in that country if the government would compel the hotel proprietors to suitably heat their places. In America we undoubtedly keep our homes and public places too warm, but in Australia they assuredly keep them too cold for comfort, even for the Australians themselves. If we had been the only ones to suffer we might have supposed the fault to be ours, but all suffered alike. The only difference was that we were not reconciled to it, while the Australians seemed to take it as a matter of course and accepted the inevitable. Americans drink ice water; Australians do not—they know better. They can keep cool enough without that. When the American fleet visited Sydney some years ago a newspaper man asked one of the United States officers if he noted any particular difference between the Australian people and the Americans. "The chief difference, so far as I can see," said the officer, "is that the Australian likes hot drinks and cold rooms, while the American likes cold drinks and hot rooms."

Speaking of hotels recalls another serious lack of duty in some of them. There is in many almost no protection for the guests in case of fire. At the Sydney hotel we were up on the third floor. The ceilings on the lower floors were uncommonly high, so that we were very far from the ground. I asked the elevator boy—they are "lifts" instead of "elevators" in Australia and New Zealand—where the fire escapes were. "The only way out I know of is through the front window on to the porch," he said. As this was a sheer jump from a stone ledge at least twenty feet down before

reaching the porch it looked far from reassuring. It appeared that the boy had never considered the matter before, because after a moment's reflection he cheerfully remarked: "Seems a very idiotic arrangement, doesn't it? But there they are, and *there they are!* Of course," he added, propitiatingly, "there's the stairway over there."

We are terribly lax in America in many things, but we would never tolerate a condition like that in one of our leading metropolitan hotels. I "kicked" for rooms lower down, and finally got them.



Bullock Team.

Coming back from the caves to Mount Victoria we met a typical Australian bullock team and I got a snap shot of it which I reproduce.

C. N. J.

(To be continued.)

BOOK REVIEWS.

THE PREJUDICES IN DENTAL ART. BY DR. A. CHARÉZIEUX.

This is a book in the French language in which the author attacks some of the prejudices regarding dentistry. A few of these prejudices may be mentioned as follows: "If there is too much decay a tooth should be extracted," "Roots not sensitive are harmless and can be saved," "To make the gums bleed is an excellent

way to keep the teeth healthy," "When there is an abscess never extract," "Putting cotton in the ears prevents toothache," etc. It would seem hardly necessary to attack some of these ideas in this age but prejudices are often deep seated and need repeated correction before they are entirely eliminated from the public mind. It has been the aim of Dr. Charézieux in this volume to clarify the atmosphere wherever these fallacies have gained a foothold.

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

Solder Spur to Inlay:—To prevent inlay abutments from changing position in construction of bridges solder small spur to inlay so that impression can catch inlay securely, always remembering to take bite before the soldering of this spur, as spur would interfere with the taking of bite.—*A. W. Guillory, D. D. S., Kinder, La.*

Porcelain Technique:—In trimming the platinum matrix for inlay or jacket crown adopt some system whereby you will have a certain distance from the edge of the matrix to the edge of the cavity. Carry this scheme out completely around the matrix and it will save a great deal of trouble and uncertainty in moulding the porcelain which may have overlapped the margins.—*Elmer S. Best, D. D. S., Minneapolis, Minn.*

Care of Impression Trays:—Every dental laboratory should have a liberal and well-selected assortment of impression trays. When new they should be given a coat of thin solution wax and gasoline. After being used they should be boiled, wiped dry and coated again. This prevents discoloration, and the ease with which tray and impression can be separated by simply holding over heat for a moment will amply repay for the effort to keep the tray like new and always ready.—*I. B. Carolus, Sterling, Ill.*

A Valuable Discovery:—The report has recently come from Johns Hopkins University that a species of fly—the stable fly—is responsible for the transmission of infantile paralysis. This discovery is of widespread significance. There is no disease which physician and parent fears more than infantile paralysis. Scarlet fever, smallpox and diphtheria are not to be compared to infantile paralysis, and think what it is going to mean to the children of the whole country if the means by which that disease is transmitted has been determined.—*F. B. Moorehead, M. D., D. D. S., Chicago.*

Etiology of Adenoids:—This condition is found in children from the ages of two to ten years. The exact cause is not definitely known, but it is very apparent that adenoids are frequently associated with diseased tonsils and changes in the nose, such as infected turbinates, spurs of the septum and nasal polypi, and it is only fair to presume that due to the continued irritation of infective material coming in contact with the lymphoid tissue, causes it to become hyperlastic.

Acute infectious diseases, such as scarlet fever, measles and whooping cough, due to their almost specific action at times on the mucous membrane of the nose and throat, are predisposing elements in the causation of this disease.—*T. W. Brophy, M. D., D. D. S., Chicago.*

Oral Prophylaxis:—For ideal prophylaxis, we should commence with the eruption of the temporary teeth. Teach the parents or nurse to watch for and remove all foreign substance which gathers on the child's teeth. Get the little one to come in and see you. Do not try to do much work during the first visit, but entertain him a little. Give him a ride up and down in your chair; get him interested in the running water in the fountain; see if, with your help, he can jump over the back of the chair. In other words, make a friend of him. We cannot make much of a charge for such a visit, but before long you have gained a good friend and a patient, and most likely, sooner or later, the parents and some of their friends will become patients and the financial part is quickly made up. Also it is a pleasure to watch the growing interest children will manifest in keeping their teeth clean.—*F. H. Skinner, D. D. S., Chicago.*

Chronic Alveolar Abscesses Dangerous to Health:—Many dentists and physicians alike minimize the danger from chronic alveolar abscess, because it has seemed to them that harm so seldomly comes from this disease. It is true that most robust individuals are capable of destroying bacteria and their poisons existing in such limited foci of infection. Here comes in the question of immunity and susceptibility. It is well known that following influenza an old and perhaps unsuspected chronic alveolar abscess is lighted up into the acute type. We also know that the intra mural air sinuses suppurate following an infection by the bacillus of influenza, and how ear infections follow scarlet fever. The normal protectives are not sufficient to give immunity to individuals whose vitality is much lowered. Too great a degree of heat, or too great a degree of cold, change in food, over-fatigue and other things lead to susceptibility. It is well known that pigeons, partly starved, or after long, tiring flights, are readily susceptible to the anthrax which under ordinary circumstances does not affect them. Some mice which are not easily infected by the anthrax quickly succumb to its influence when caused to be worn out by long continuous exertion.—*T. L. Gilmer, M. D., D. D. S., Chicago.*

The Importance of Mixing Cement:—I do not suppose there is any metal spatula which will not become corroded by mixing cement. German silver can be affected by abrasion. The main objection is the discoloration. The tantalum spatula which has been advocated is proof against chemical action and is a shade harder than some other metals, but a mix with a tantalum spatula cannot be made without showing discoloration. You can start with a white cement and come out with a dark gray one when mixing with a tantalum spatula. I prefer the heavy glass slab to a thin piece. If the thin glass plate is not held directly in the fingers there would not be much change of temperature imparted by the hand. In any case, when the glass slab becomes scratched, throw it away. If you are using window glass you can throw it away with a better heart than if you paid \$1.50 for it. This question of temperature of the slab impresses me as being of greater importance the more I see of the difficulties experienced by dentists in cement mixing. To become master of the situation under all temperatures and atmospheric conditions, I believe that the progressive and

careful dentist will, in time, come to be governed by the readings of a hygrometer in his operating room and use some form of mixing slab which embodies a thermometer and be careful to have that thermometer indicate a definite temperature.—*W. V-B. Ames, D. D. S., Chicago.*

The Contact Point:—I want to emphasize the importance of the contact point by relating a little personal experience. The contact point has been a great source of annoyance to me, not only in the filling of teeth but in my own mouth. Some twenty years ago a very splendid and competent operator put in a gold foil filling in an upper first molar for me, and also one in the second bicuspid. By some force or stress I broke off the inner cusp of the second bicuspid, and the filling was dislodged in that tooth, and I remember calling on one of my friends to restore the space with a crown. In making a crown for that space he could not restore the contact point which had never been there in those two fillings that had previously been inserted. But the crown was put on, and I went down to the Illinois State Dental Society at Springfield, and if there was anything that was annoying it was the interproximal space between those teeth. I was standing in the lobby with a silk thread trying to dislodge the food from the interproximal space. The dentist who inserted the crown came along and asked what I was doing, and I said, "You have ruined my mouth." He said: "I will fix that for you as soon as we get back to Chicago." He took the crown off, and made a contact point and replaced it, but he did not do it soon enough, so I have lost all the gum tissue in the interproximal space, and I am nearly in as bad condition as I was before, but if the two fillings had had proper contact points in the beginning there would have been no trouble.—*G. W. Cook, D. D. S., Chicago.*

MEMORANDA.

[Society notices will be given one insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

TOOTH CHIP COSTS DENTIST'S EYE.

INFECTED SPECK OF ENAMEL LODGES INSIDE AND REMOVAL OF ORB ORDERED
BY DOCTOR.

A speck of enamel, chipped from a patient's tooth by a dentist's drill, flew into the eye of Dr. Le Roy Kerr a month ago. Yesterday he had almost decided to have the eye taken out.

Dr. Kerr had offices in the Schiller building, adjoining those of Dr. Jay F. Pitts.

"He thought nothing of it when it happened," said Dr. Pitts last night. The next day the eye was sore, and he went to a doctor, but it was too late to stop the trouble. Apparently a diphtheritic germ had been carried on the enamel into the eye. He went to Milwaukee to see a specialist yesterday and was advised to have the eye taken out."—*Chicago Tribune*.

STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY, STATE OF NEW JERSEY.

At a special meeting of the State Board of Registration and Examination in Dentistry, held at Newark, N. J., on Saturday, June 14, the resignation of Dr. Charles A. Meeker as secretary-treasurer was announced; also the retirement of Dr. Meeker from the board on account of ill health, after twenty years of faithful service.

Governor Fielder has appointed Dr. Cornelius Kiel of Hoboken to fill Dr. Meeker's unexpired term. Dr. Alphonso Irwin of Camden, N. J., has been elected secretary-treasurer. Hereafter all communications concerning the granting of licenses to practice dentistry in the state of New Jersey should be addressed to Dr. Alphonso Irwin, 425 Cooper street, Camden, N. J. The office of the New Jersey State Dental Commission has been transferred now to Camden, N. J.

DENTIST FOR STATE BOARD OF HEALTH.

We take the following from the Mansfield, Ohio, *News*:

Columbus, May 31.—Dr. H. C. Brown, a Columbus dentist, today was appointed a member of the state board of health by Governor Cox to succeed Dr. Frank Warner, also of Columbus. This is the first time in the history of the state that a dentist has been given membership on the state health board.

The appointment caused some surprise in Columbus, as it was generally believed that Dr. Warner of this city would be reappointed to the board.

He was appointed by Governor Harmon as delegate to the international congress on school hygiene, which meets in Buffalo in August.

Dr. E. F. Campbell, executive secretary of the state board of health, in commenting on the appointment today, said:

"While at first I thought it was somewhat surprising, it is a most satisfactory appointment. Dr. Brown, I am informed, has been generally active in public health matters and is regarded as one of the most progressive dentists in the United States. Medical and dental inspection of school children has demonstrated that fully 75 per cent of our school children are physically defective and that a majority of these have defective teeth and know nothing about the fundamentals of mouth hygiene.

"It is very important that this field of public health work be developed and the public educated in regard to its importance," he added.

THE OHIO STATE DENTAL SOCIETY.

Announces the 1913 meeting to be held at Toledo, December 2, 3 and 4, 1913. This meeting will be an innovation. It will mark the beginning of a new epoch in state dental meetings. Nowhere at any time has there been planned a meeting like this. Fields heretofore untouched will be opened at this meeting. Men of national and international reputation will be in attendance and present subjects along the lines of scientific research, systemic treatment and preventive measures of incalculable value to the dental profession.

The clinics will also mark a new epoch—only fifteen clinicians, men who have attained the highest proficiency in their respective fields, will be

here. The unit system will be used and every dentist in attendance will hear and see all that each clinician says and does.

Toledo is on the main line between New York and Chicago, and has the finest restaurants, hotels, theaters, between these two great centers. Toledo is known as the Golden Rule city. Our police carry no clubs—they apply the golden rule. Come and see it in operation. No dentist need stay away on account of the police.

The Commerce Club, occupying the two upper top floors of the 16-story Nicholas building, has graciously extended the privileges of the club to visiting dentists.

Exhibitors desiring to secure space, and all others interested should address Committee Local Arrangements, 718 Spitzer Building.

AMERICA'S FIRST SAFETY EXPOSITION.

The First International Exposition of Safety and Sanitation ever held in America will take place in New York city, December 11 to 20, 1913, under the auspices of the American Museum of Safety. Safety and health in every branch of American industrial life, manufacturing, trade, transportation on land and sea, business, engineering, in all of their subdivisions will be represented at this exposition. It will be the first step toward making a representative exhibition of the progress of safety and preventive methods in America.

There will be absolutely no limit to the scope of the exposition. It will embrace everything devoted to safety, health, sanitation, accident prevention, welfare and the advancement of the science of industry.

By a special act of Congress, exhibits from Europe and other foreign countries are to be admitted free of duty. European employers have cut their accident and death rate in half by a persistent campaign for safety. There are twenty-one Museums of Safety in Europe. All of these various museums will contribute to the American Exposition.

In the United States every year 40,000 workers are killed and 2,000,000 are injured, while 3,000,000 are ill from preventable causes. A conservative estimate of the wasted wage earning capacity of the latter for one year is four hundred million dollars. Thus it can be seen what America has to accomplish in the way of conserving human resources. The main object of the First International Exposition of Safety and Sanitation is to point the way.

RECENT PATENTS OF INTEREST TO DENTISTS.

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| 1,039,683. | Dental tooth regulating appliance, E. H. Angle, New London, Conn. |
| 1,039,728. | Dental apparatus, John M. Gilmore, Chicago, Ill. |
| 1,040,490. | Dental floss package, Aleck Bauer, Chicago, Ill. |
| 1,040,959. | Tooth brush, F. C. Kuinders, Seattle, Wash. |
| 1,040,571. | Artificial tooth and making the same, H. P. Osborn, Bayonne, N. J. |
| 1,040,576. | Dental engine, S. H. Pieper, Rochester, N. Y. |
| 1,040,577. | Dental engine, O. H. Pieper, Rochester, N. Y. |
| 1,040,421. | Dental plugger, W. A. Salt, Providence, R. I. |
| 1,041,601. | Dental pivotcrown remover, Van Broadus Dalton, Cincinnati, O. |
| 1,041,270. | Dental articulator, A. Gysi, Zurich, Switzerland. |
| 1,041,098. | Dental gold cap crown remover, I. B. Kenney, Wadena, Minn. |
| 1,042,105. | Artificial tooth, T. Goodhugh, Brockley, London, Eng. |
| 1,042,039. | Dental disk guide, Jacob B. Schlund, Kennewick, Wash. |
| 1,044,362. | Blowpipe, A. J. Eddy, Long Branch, N. J. |
| 1,044,764. | Orthodontia appliance, M. N. Federspiel, Milwaukee, Wis. |

- 1,044,651. Blowpipe, J. Harris, Cleveland, O.
 1,044,523. Dental stool, C. M. Hedman, Chicago, Ill.
 1,044,892. Swaging device for dental and other purposes, R. Lamb, Liverpool, Eng.
 1,045,586. Dental articulator, T. H. Montague, Blue Island, Ill.
 1,045,225. Tooth restoration, F. S. Welden, New York, N. Y.
 1,044,614. Dental impression tray, E. E. Wightman, Chicago, Ill.
 1,043,284. Dental apparatus, R. E. Zellers, Portland, Ore.
 Copies of above patents may be secured for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

THE PANAMA-PACIFIC DENTAL CONGRESS.

The work of promoting the Panama-Pacific Dental Congress is progressing in a most satisfactory manner and the committee of organization is pleased to report that up to date in thirty-eight states of the United States, executive committees have been appointed to co-operate with it in advancing the interests of the Congress.

Seventeen foreign states and countries and the Island possessions of the United States have taken similar action and the appointment of like committees in other states and other countries is now pending.

It is hoped that within the next three or four months every state and country in the world where dental organizations are known to exist will be represented by an executive committee, the duties of which will be to promote an interest in the Congress and secure memberships and contributions to the program.

Instructions defining the duties and authority of these committees will shortly be sent to each of them.

The committee is in almost daily receipt of letters from all parts of the world promising support and attendance and from present indications the Congress will be the greatest yet held by the dental profession.

Dr. H. A. Frederick of San Francisco has been elected to fill a vacancy in the board of directors and the committee of organization, in order to promote the interests of the Congress and avoid a repetition of the unpleasant controversies and contests for office which disturbed the organization and opening of the Fourth International Dental Congress, has effected a permanent organization with the following officers: President, Dr. Frank L. Platt, San Francisco, Cal.; vice-president, Dr. Charles M. Benbrook, Los Angeles, Cal.; secretary, Dr. Arthur M. Flood, San Francisco, Cal.; treasurer, Dr. Fred G. Baird, San Francisco, Cal. Executive committee, including the officers named above: Dr. J. Loran Pease, Oakland, Cal.; Dr. H. G. Chappel, Oakland, Cal.; Dr. R. B. Giffen, Sacramento, Cal.; Dr. A. M. Barker, San Jose, Cal.; Dr. Arthur W. Chance, Portland, Ore.; Dr. G. T. Williams, Seattle, Wash.; Dr. Geo. F. Stiehl, Salt Lake City, Utah; Dr. B. M. Brookfield, Idaho Fall, Idaho; Dr. H. H. Wilson, Phoenix, Ariz.; Dr. H. A. Frederick, San Francisco; Dr. W. A. L. Knowles, San Francisco.

Nearly \$13,000 has now been subscribed to the promotion fund, the Southern California Dental Association at its recent meeting having subscribed \$1,000 and its members as individuals nearly \$1,500 more.

The Pacific Coast states, aside from California, represented on the board of directors, are doing their part and the success of the Congress so far as can be judged at the present time, seems positively assured.

THE FORSYTH DENTAL INFIRMARY FOR CHILDREN.

200 The Fenway, Boston, Mass.

Permanent Staff, salary \$1,000 per year:

Examination of graduates in Dentistry (of less than three years stand-

ing), for appointments to positions on the Permanent Staff of this Institution will be held at Boston, Mass., on July 1st, 1913.

The Forsyth Dental Infirmary for Children is an institution founded by John Hamilton and Thomas Alexander Forsyth in memory of their brothers James Bennett and George Henry Forsyth.

This Institution which will have 64 dental chairs is expected to open in the fall of 1913. It is intended to care for the dental needs of 220,000 school children in Boston and its suburbs. The clinical department, splendidly equipped and presenting unequaled facilities for post-graduate study in dental prophylaxis, orthodontia and oral surgery, offers to a limited number of recent dental graduates the opportunity to serve as members of its permanent staff at a salary of \$1,000 per year.

Appointments will be made for one or two years.

Members of this staff will be entitled to the advantages of reports and clinics by experts in the various branches of dentistry, from different parts of the world.

A diploma of service will be issued to each member of this Staff who has completed his term to the satisfaction of the Trustees.

Successful candidates for positions on this staff will be required to pass the examination of the Massachusetts State Board of Registration in Dentistry.

Applications for the above positions should be made not later than June 28th, 1913, to the Director, Harold DeW. Cross, D. M. D., No. 149 Tremont Street, Boston, Mass., who will gladly furnish information to those interested.

Permanent Staff appointments for half time service, salary \$300 per year:

The appointments for this service are open to men and women graduates in dentistry, and offer unusual opportunities for clinical work in dental prophylaxis, orthodontia and oral surgery, in the best equipped and most modern institution of its kind in the world.

Appointments will be made for one year as follows:

Half time service, requiring twenty-four hours per week, salary \$300; one-third time service, requiring eight hours per week, salary \$100; and will be made subject to satisfying requirements of the Massachusetts State Board of Registration in Dentistry.

A diploma of service will be issued to those who have completed their term to the satisfaction of the Trustees.

Members of this staff will be entitled to the advantages of reports and clinics by experts in the various branches of dentistry, from different parts of the world.

All material and necessary operating instruments will be furnished; up-to-date apparatus, including electric engines, sterile instrument trays, fountain cuspidors, compressed air and modern operating-room-type lavatories will be available for use.

Applications for the above positions should be made not later than July 1st, 1913, to the Director, Harold DeW. Cross, D. M. D., No. 149 Tremont Street, Boston, Mass., who will gladly furnish information to those interested.

DENTAL COLLEGE COMMENCEMENTS.

LINCOLN DENTAL COLLEGE.

Graduates—S. C. Adkins, C. M. Brookman, R. A. Gibson, R. V. Nicholson, H. T. Olson, W. H. Thomas

ST. LOUIS UNIVERSITY—SCHOOL OF DENTISTRY.

Graduates—S. Baker, L. J. Dicks, C. Gilliland, N. T. Hoxmeier, H. M. Stamm, G. J. Vandas.

TEXAS DENTAL COLLEGE.

Graduates—C. G. Bloom, P. DeM. Bevil, T. M. Wheat, J. Carter, A. Barjau, F. F. Strozier, H. M. Platt, D. L. Sollock, J. A. Carpenter, W. T. McAlpin, C. W. Bogan, S. H. Crews, E. R. Zellner, J. B. Seay, J. R. Saunders, J. Van B. Chandler, A. J. Caspersen, E. C. Bloom, O. S. Shaw, L. L. Pierce.

VANDERBILT UNIVERSITY—DEPARTMENT OF DENTISTRY.

Graduating Class—H. G. Austin, G. A. Braly, Y. M. Brown, B. S., L. W. Bryant, J. M. Buddin, S. F. Call, E. B. Connell, H. L. Crow, S. A. Crum-bley, Jr., T. W. Gillis, L. L. Graham, E. B. Hammond, A. B., C. C. Harris, T. C. Harris, R. L. Houston, W. F. Jones, H. G. Kennedy, G. P. Kumpe, E. O. Mansker, H. F. Martin, R. L. Morris, J. G. McDowell, J. H. Park, W. P. Rea, W. E. Reeves, W. A. Spence, W. C. Steele, R. E. Stevenson, J. C. Taylor, G. V. Taylor, G. F. Tenison, M. Thomas, W. O. Thomas, J. H. Turner, J. J. Vaughn, G. Wheeler, B. S., L. E. Wilson.

UNIVERSITY OF MICHIGAN COLLEGE OF DENTAL SURGERY.

B. M. Adams, H. M. Ballard, R. L. Benedict, H. S. Bennett, H. L. Black, M. H. Bristol, W. E. Brown, C. W. Burkheiser, L. F. Burlingame, A. S. Chichester, E. L. Church, F. A. Clear, W. C. Creath, J. D. Eichelbarger, A. A. Ericson, C. W. Fargo, F. Feuerstein, C. C. Forrester, S. A. Foy, H. W. Geiger, E. M. Griffin, A. T. Grossman, C. R. Hall, J. W. Hall, J. F. Hannon, F. R. Harding, A. W. Hogan, J. H. Howell, L. C. Jackson, A. H. Jensen, P. A. Johnson, H. L. Jones, S. L. Kingsbury, E. J. Kosanke, C. S. Larned, A. J. Lautmann, W. C. Leggett, I. A. Lehman, C. Locke, J. J. McCarthy, H. W. Mack, H. H. McUmbler, G. B. F. Monk, E. J. Mudge, H. E. Myron, C. H. Nelson, E. L. O'Connor, R. C. O'Donnell, M. A. Pastrana, C. W. Peasley, W. F. Quinn, H. S. Read, B. D. Roe, G. C. Robinson, W. E. Sargent, L. V. Savage, G. R. Schiller, A. J. Schroeder, R. F. Sitter, F. W. Smith, W. B. Smith, J. W. Snyder, J. F. Spencer, F. C. Tesch, W. T. Verhoeks, O. N., Wilton, R. E. Woleslagel, H. P. Yoder.

NEW YORK COLLEGE OF DENTISTRY.

Graduates.—C. S. Alexander, S. P. Anisfield, E. Appel, H. F. Barge, S. Berg, B. Bregman, G. Brickelmaier, E. S. Bronstein, I. Brook, C. J. Brophy, C. Brower, I. Buchenholz, T. Busch, R. Chashin, B. Chess, C. L. Close, W. Cohen, W. Z. Coltinuk, S. E. E. Deutsch, A. J. Dolan, M. Ehrenhaus, J. Eisler, J. Evseroff, M. Feintuch, I. Flicker, H. R. Gesell, P. H. Giebelhouse, S. Glouberman, A. I. Goldberger, L. Goldenthal, A. Goldstein, H. Goodman, O. Greenberger, W. Greenberger, G. K. Greminger, E. B. Gretsche, H. Hausen, L. J. Heiman, L. Holtzman, I. B. Horovitz, L. Hyams, R. S. Joffe, A. B. Jurka, M. E. Kaiser, B. Kamin, G. V. Kern, H. J. Kirkland, S. Klein, S. Koplik, M. I. Kossow, A. J. Krbecek, M. S. Kronfeldt, A. Kuntz, V. Lekowski, E. Liaban, S. J. Lifschitz, J. W. Maller, W. W. Mandelbaum, E. A. Marks, V. Maruchess, I. D. Mehlman, D. Meinwald, J. C. R. Milano, J. P. Miller, H. Milvitzky, W. C. Mogk, S. J. Muroff, M. P. Murphy, H. Nagel, G. L. Nicholls, H. Okun, J. Oshlag, F. Ovary, E. Perlberg, L. Pines, E. E. Powell, G. P. Ratner, J. F. Rehmann, W. Reisner, B. Rettenberg, L. B. Ribakoff, D. Rinzberg, S. N. Robbins, S. Rosen, M. Rosenbaum, D. H. Rosenberg, A. H. Rosenblum, B. Rosenwasser, L. Sadoff, D. Saletan, I. L. Scher, A. Schonberg, H. W. Schwartz, J. R. Schwartz, M. B. Shafer, J. Shapiro, J. J. Shapiro, S. Sheinberg, M. Sheinblatt, S. Sherman, B. Shnayerson, L. Silverman, E. Specht, J. J. Stern, R. T. Stork, J. L. Taft, D. D. Teller, D. I. Vogel, H. Volk, A. B. Weil, I. Weinberger, S. Weinrib, M. Weinstein, M. L. Weissberger, D. Weissburg, W. Witt, M. Yavelow, H. Zasuly, B. Zuckerman.

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, SEPTEMBER, 1913.

No. 9

REPORT OF COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY R. J. CRUISE, D. D. S., CHICAGO.

INTRODUCTORY.

In preparing this report on the Dental Science and Literature of the past year, I have consulted *The Cosmos*, *The Dental Review*, *Items of Interest*, *The Dental Summary*, *Oral Hygiene*, *The Digest*, *The British Journal of Dental Science* and some French and German journals.

As a special inducement to undertake this task for which I felt unfit I was told that I might make my report short and epitomize it as much as possible, but as time and effort have progressed, I only found the inducement to be a difficulty, for the more I tried to epitomize my report the more arduous has my task become.

Dental literature has become so voluminous, so interesting and so scientific of late that anything like a complete report of even one subject, would consume more time than might reasonably be allotted to this entire report, and on the other hand to read the titles of papers and names of writers on every topic of interest could only be considered a rather useless and painful operation to inflict upon you.

So I have made a humble effort to prepare and present to you a short reference to the various subjects, as the trend of thought in the literature of the past year suggests.

I have also a list of the 24 most important books that have appeared during the past year; I shall not read this list either; it will appear in the published transactions. To steer clear of partiality, and mention only the really meritorious books requires rare judgment and unfailing discrimination, two qualities

*Read before the Illinois State Dental Society, May, 1913.

seldom found in one individual. The critical reviews in the journals, with a combination of ability and diplomacy have a good word for all of them, but we might perhaps read between the lines that no special landmark has been reached during the past year in bibliographical effort. As it is not possible for me to give passing interest to this report, and at the same time stop and give credit for every thought I should at the outset disclaim originality, and therewith responsibility, except in so far as the inevitable "Ego" must creep into any critical review of this kind.

And now if you will bear with me for about 30 minutes I will endeavor to carry you through the different items of this report, and perhaps can promise to get off the platform before carrying you to the intolerable stage.

Without any further apology I will give you the result of my epitome. The various subjects have been taken up without any special reference to order of their importance.

PYORRHEA ALVEOLARIS AND PROPHYLAXIS.

Five years ago the Committee on Dental Science and Literature when writing on this subject opened its report with the following statement: "As to the etiology of pyorrhea there is not the faintest hope, as reflected in literature, of solving this pathologic riddle."

It is interesting to note that the same report culls from the literature of that year the one feature which then contained the faintest hope that scientific research was anywhere on the right track of the solution of the problem surrounding the disease, and having discussed the then novel thought of Opsonism as applied to pyorrhea, concludes with, may I call it prophetic hope, by saying: "And who can say his suggestion is not fraught with good reason."

The past couple of years have seen considerable literature brought before us along this line, and the past year brings us, I may say, to the point where theory has been added to by extensive experimentation, and results are beginning to make us open our eyes and take notice.

Various papers have appeared during the year rehearsing the old ideas of causation and treatment of pyorrhea, containing nothing really new, yet valuable in keeping before us what we

have already learnt by years of experience. A report of these papers is not called for here, but I cannot pass the subject without some further reference to the vaccine theory and its application, fondly nurturing the hope that future and further research may lead to more definite and interesting developments along this line.

The basis upon which the practical value of a vaccine lies in treating pyorrhea is undoubtedly the fact that pyorrhea is an infectious disease, and the infection is generally located at a point that cannot be physically reached by antiseptics.

The necessity for the removal of calcareous deposits, carefully and completely, the improvement of occlusion of the teeth, the correction of faulty metabolism which is directly responsible for a superabundance of calcium salts in the saliva, the necessity for all this is not minimized in the least and in a great many cases of so-called pyorrhea it is not necessary to go further, but in cases of true pyorrhea, where there is an infection of the alveolus producing pus local treatment has an absolute limitation.

What better proof have we of this than the frequent cases of recurrence of the disease after we have cured it?

The milder cases if neglected may develop in time true pyorrhea, but if the resistive power be raised the danger of future infection is minimized. The resistive power to infection can be raised by vaccines, which prevent as well as overcome infection.

If you cut your finger with a dirty knife you immediately apply some alcohol or antiseptic, but if tetanus follows, the seat of injury is forgotten, and the antitoxin is injected to overcome the systemic infection.

Herein lies the basis for the vaccine theory.

In the experiments carried on, both on animals and the human subject, stock vaccines have almost invariably been used, at the same time it has been allowed that an autogenous vaccine would be more scientifically correct, but the facilities for the preparation of such being limited renders the use of the stock vaccine more practical.

The following conclusions have been deduced from the experiments that have been made with vaccines:

(1) Pyorrhea is not a purely local condition, although it may be caused by local means.

(2) Predisposing causes are:

(a) Malnutrition producing constipation and faulty metabolism.

(b) Poor circulation of the alveolar tissue, due to astringent mouth washes and nervous disorders, these conditions causing malnutrition of alveolar tissue, lowering greatly the force of resistance to invading bacteria.

(3) Pyorrhea may be caused by purely local conditions, such as putrescent canals, alveolar abscesses, ill-fitting crowns.

(4) Pyorrhea produces constitutional disorders that are far reaching in effect and may even be the indirect cause of death.

(5) Pyorrhea is contagious.

(6) The resistive power of the leucocytes to invading bacteria is the main determining factor.

(7) Pyorrhea infection becomes impossible when the force of resistance to the invading bacteria is raised to a high point.

In these days when through trial and tribulation and even bloodshed the rights of the gentle sex are being brought so prominently before us, I must not overlook a question pertinent to the subject of pyorrhea and prophylaxis, The Dental Nurse. This interesting maiden attracts considerable attention in the literature of the past year, and as far as I can count the votes the majority are singing to her the song, "She certainly looks good to me."

One Eastern state has become so interested in the subject that its legislature has been called upon to act in regard to her license, and the influence behind this legislation would license her to assist dentists and to clean teeth, but not to treat pyorrhea, a strange anomaly in view of the contention which I find so often registered in last year's literature that ordinary cleaning of teeth is rather conducive to than preventive of the disease.

It cannot be possible but it might be a logical sequence from the premises that our eastern brethren were anxious to develop a special crop of the pyorrhea germ, and Kirk in commenting on this subject says: "What beneficent end was hoped to be accomplished by preventing the nurse from attempting to cure pyor-

rhea was not stated in the text of the bill. It is perhaps the expression of an unnamed dread that by some occult means her attempts might in God's providence be crowned with more success than has hitherto signalized the efforts of the average practitioner. And in view of all we now know about the variety of inflammatory disorders that lead to loss of teeth from destruction of their retentive tissues, what in the name of modern scientific pathology is Riggs disease anyhow? Everybody has tried to cure pyorrhea with varying results; why not let the dental nurse have a try?" However it seems inevitable and probably to good purpose that she will be with us. Her training, her license, her position, and her ultimate utility are questions that must resolve themselves in due time.

ORAL HYGIENE.

Another year passed finds us surrounded by much thought on the subject of oral hygiene. The subject presents a dual aspect. First—What is the public expecting from the profession as a result of this great movement, now apparently well under way? Secondly—What is the profession doing in a practical way to deliver to the public the great benefits which it claims for strict attention to all the rules it is laying down in public utterance and office advice as essential for the health and welfare of the community.

Other reports such as that of the Public Service Commission will recount the work of lectures throughout the state and country carrying this great message far and wide, listened to by attentive ears, but of all the literature on the subject that has come under my notice none seems to-day to be of such paramount importance to the dental profession at large as that which deals with the question: How shall the profession meet its new obligations resulting from its propaganda for popular education in oral hygiene and preventive dentistry?

We are teaching, we are preaching, we are bringing force to bear for legislation. Reading an article in the *Digest* for February of this year by W. G. Ebersole, M. D., D. D. S., of Cleveland, Ohio, we are amazed at the national aspect this movement has assumed. (As a result of the great Mouth Hygiene Meeting held in Washington, in addition to the President and Surgeon General Blue, several national officials have

given official recognition to the National Mouth Hygiene Association, and have promised to co-operate with it in its publicity campaign.)

The National Mouth Hygiene Association has planned a nation-wide campaign for the purpose of:

First.—Bringing about legislation which will permit local boards of health and boards of education to co-operate in the establishment of a complete system of medical and dental inspection, and in establishing and maintaining medical and dental clinics to care for the indigent poor.

Second.—To secure legislation which will make it possible to protect the public from that class of dental practice which is a menace not only to the individual but to the health of the community.

Third.—To secure legislation which will not only improve the conditions surrounding the teaching profession of this country, but enable boards of education to pay salaries commensurate with the services rendered.

Another important step taken by the National Mouth Hygiene Association in its educational campaign has been the production of the motion picture film entitled "Toothache." This was shown first at the Washington meeting of the National Association, since then before various leading dental societies in the larger cities. Upon every occasion it has been enthusiastically received, and endorsed by the members of the dental profession as the greatest thing that has been offered for dental educational purposes to date.

This is all glorious, and redounds to our credit as a profession in an effort for great and useful accomplishment, but if we follow the literature of the subject in half a dozen to a dozen articles that have appeared in the past year, notably one by Herbert L. Wheeler, D. D. S., *Cosmos*, July, '12, by N. S. Hoff, D. D. S., *Cosmos*, same month; one by Alfred C. Fones, *Items of Interest*, February, 1913, we might be led to believe that we are still blind to the other side of this great movement, the practical application of all this enthusiasm, not only along the line of practical benefit to the indigent, but also to our individual patients.

To give a satisfactory digest of these excellent articles

would consume a great deal of time not at my disposal in this report, so I must refer those interested in this important subject to them for complete ideas on it. Suffice it to glean a few thoughts which may impress the importance of this side of the question.

The principle upon which we must gain recognition, and the line upon which we must make good if we desire to fill the position that is being rapidly opened up to us, is not only to prove ourselves able to care for the welfare of the teeth, but also to prevent those conditions in the human mouth which produce infection. We must demonstrate that the care of the teeth lessens the liability to infection by disease germs in such diseases as tonsilitis, diphtheria, pneumonia, tuberculosis, gastritis, etc.

It is beyond all reasonable hope to expect that with the universal necessity for oral hygiene demonstrated, and the legion of cases where help is needed flooding in upon us, that the various charity organizations and benevolent institutions can make much headway.

Apart from the demands upon us individually for our services which have to be met as we ply our daily toil, and the demands of living which have to be paid for, in addition to the fact that our noble profession cannot, in a broad sense, be considered lucrative, and comparatively few, unless they marry or inherit it, attain a competency: apart from all this, the habit which we have acquired of giving little or no time outside of our offices to charitable purposes, has become a part of our constitutional quality. I do not say that this is right. I would fain champion it as an attribute, but if all this is to be changed and the present hygiene movement seems to demand it, herein lies room for another stupendous campaign.

Well, gentlemen, be this as it may, as a profession or individually we are not excused from giving a certain amount of our time towards solving this problem of the physical welfare of the community, because if the problem is solved as far as it concerns mouth hygiene, it must be solved through the dental profession. Unless the dental profession accepts its responsibility and does its share in propagating this modern gospel of preventive medicine, the question of mouth hygiene will not

only not be properly or intelligently settled, but dentistry will have lost the greatest and grandest opportunity that has ever come to it for demonstrating to the public that it is a liberal profession, and that it has for its foundation, as all professions should have, a genuine desire to serve the public welfare.

ANESTHETICS, GENERAL AND LOCAL.

This is a subject upon which a great deal of literature has appeared during the past year, and it therefore deserves more than passing attention in this report.

Probably one of the greatest blessings that has come to man, rendering the surgical treatment of disease possible, is anaesthesia, and it could not enter into the mind of any member of the medical or dental professions to belittle the blessings it has brought to us.

General anaesthetics have a useful and limited sphere in our profession, and I venture to say that beyond a certain broadening along conservative lines, they will always retain only a limited utility.

Recently we have been struck by a tidal wave of anaesthesia, and the manufacturers of apparatus, wisely awake to their own interests and ever ready to supply our needs either real or imaginary, have flooded the market with various appliances which are accompanied with copious literature or clever demonstrators; and if we were to believe all that we read or hear we might be led to think that the public now demand as a preliminary to all dental operations with a semblance of pain connected with them, we should turn on a dose of nitrous oxide and oxygen before proceeding further.

Another extreme has been reached in the idea of rotary anaesthesia which would necessitate the reconstruction of our dental chairs so that we could spin our patients into unconsciousness before starting to operate.

The systems advocated, though no doubt they originated with members of the profession, have a distinct commercial aroma surrounding them, and have not yet received the endorsement of the best element of the profession, so a word of warning is sounded against too hasty spending of time and money in their adoption till we are sure that they will prove as

useful and practicable as those who are championing them would have us believe.

A certain class of patients exists for whom any dental operation suggests an anaesthetic. If some of the methods before us render the administration and the operation easier or safer for both dentist and patient, they deserve our serious consideration, but the universal adoption of anaesthetics in dentistry seems very unlikely and impractical, and as one man has amusingly suggested, it looks like an effort to eliminate the fear of pain by substituting the fear of death.

Here a note of warning might be sounded to those who are dabbling in anaesthetics without much previous experience. We owe it to ourselves and the public if we administer anaesthetics to be thoroughly versed in all that pertains to them, and this cannot be attained by the study of literature that accompanies apparatus.

Fatalities occur at times where little would suggest their probability. Only recently in Berlin a death followed the administration of nitrous oxide and oxygen, and that at the hands of an anaesthetist. The post mortem disclosed the unlooked for cause of death.

It should be remembered that when the patient stops breathing it is too late to call your neighbor or look up the literature on the subject.

Another important point to be remembered is that at all times and most especially when only the anaesthetic stage is induced a third party should always be present.

It is a fact which is entirely beyond dispute that every general anaesthesia represents a serious intoxication of the central nervous system.

Another consideration is the medico-legal aspect, and I cite the words of an authority (Kupfer): "After extensive observations I do not hesitate to maintain that general anaesthesia, with a few exceptions, is unnecessary in operations in the oral cavity, and that as a medico-legal expert I should be unable to protect an operator from indictment in case of fatal accident from general anaesthesia."

These considerations should cause us to give serious attention to the great possibilities of local anaesthesia in the cases

where the elimination of pain is absolutely indicated, and this gives room in passing for the thought that pain is very often the dentist's most valuable assistant in obtaining correct diagnosis, especially in the treatment of pulpal and pericemental conditions.

The technique of local anaesthesia and the drugs to be used with best results and greatest safety receive much attention in the literature of the past year, a most complete paper on this subject appearing in *Cosmos* of February, by Richard H. Riethmüller, Ph.D.

THE TREATMENT OF TEETH AND CONSIDERATIONS ALONG THE LINES
OF MATERIA MEDICA AND THERAPEUTICS.

As all operative procedures on teeth, vital or dead, must in a degree be considered failures if the dental pulp has not been either properly cared for or properly disposed of, it seems that we should be especially attracted by all literature that may help us in a subject of such vital importance.

The fact of the matter is that we look to just a few for instruction along these lines and they willingly have given and continue to give us the results of their scientific study; but the question is, are we, as a profession, applying all this knowledge in a scientific manner? Is it not a fact that either because we are too busy, or because tradition and custom forbids so many from asking and obtaining fees commensurate with this class of work that it is so often overlooked and improperly done.

A member of this Society, Dr. J. P. Buckley, of Chicago, has probably done as much or more than any man in recent years towards placing the treatment of teeth on a practical and scientific basis, and he sounds the keynote of the situation in his discussion of Doctor Biddle's excellent paper by saying: "Successful therapy, dental as well as general, depends largely on the proper interpretation of the disease we are endeavoring to cure. The trouble is that dentists do not take up the subject of pathology and school themselves so as to read the clinical symptoms of the diseases that they are endeavoring to treat by the application of therapeutic remedies. In the average case of toothache, one question is asked, Is the pulp vital or dead?

That is not enough. If the pulp is vital, we should find out whether it is in a state of active or passive hyperemia, or whether there is true pulpitis or true inflammation."

Again, in the literature of the past year, I find frequent references to the warning that we must know our remedies, we must study the pharmacology and the chemistry connected with the drugs that we are using, and then we shall have less reason to be afraid of them or their action.

In this connection I cannot but refer to a paper which appeared in the February number of the *Cosmos*, entitled, "Warning against the indiscriminate use of formaldehyde preparations," by Carl J. Grove, L. L. B., Ph.G., D. D. S.

I see that the doctor is a Bachelor of Laws, but there is one law of common sense that he has painfully overlooked, that is, "Be sure you are right and then go ahead," and it is equally surprising to me that Doctor Kirk, the editor of the *Cosmos*, could bring himself to publish anything so scientifically incorrect.

Drugs are supposed to be used "properly," and that implies correct diagnosis and correct treatment. Indiscriminate use of anything suggests the playing of a fool's part, but the use of formaldehyde preparations, formocresol for example, properly, and with discrimination has been proven by years of clinical experience to be scientifically correct, extremely valuable in the treatment of teeth, and productive of no harm.

Time forbids going into detail of scientific reasons for this contention, but the most casual student and apriori, Doctor Grove, who with special qualification has had additional opportunity to study the subject, should know that the action of formaldehyde on normal and abnormal tissues is entirely different, and while it is contraindicated in the one case it is not in the other.

I might add, though perhaps it is unnecessary, that my criticism of Doctor Grove's paper emanates wholly and entirely from myself, and is not the result of my regard for and friendship with Doctor Buckley, who could defend himself better than I could, but it is the result of several years' clinical experience, some special study of the subject since the appearance of this paper, and a desire that the truth prevail.

I wish to direct special attention to a very valuable and scientific paper on arsenic by Dr. J. E. Hinkins, of Chicago, which appears in the July number of the DENTAL REVIEW, under the title of "The Dangerous Drug in Dentistry." Doctor Hinkins gives us the result of his usual thorough and careful study of arsenic and its uses and abuses.

May I also make special mention here of a valuable addition to dental literature which appeared in the September number of the DENTAL REVIEW, a paper entitled, "Preventive Treatment of Peridental Disease," by Dr. Arthur D. Black, of Chicago.

OPERATIVE DENTISTRY.

Operative dentistry, in so far as it applies to the use of gold foil, receives little or no attention in the literature of the past year.

On the other hand, the operative procedures as applied to the gold inlay seems to be engrossing the attention of those who are looked on as authority on filling teeth with gold.

When the casting process and the cast gold inlay appeared on the horizon some six years ago, it was hailed as the new born of prosthesis, and operative dentistry was supposed to have received a shock from which it could never recover. Operating rooms were to be reduced in size, and laboratories enlarged.

On the other hand we were warned not to be carried away by these tidal waves that have struck our profession from time to time. However, the wise heads saw further and saw that this wave was not to carry with it destruction, and leave in its wake the wonted accumulation of junk that the supply house had willingly equipped us with, and the fact remains which is becoming more and more emphasized every day, that the cast gold inlay, which has indeed come to stay, is in all its important features and aspects a strictly speaking operative procedure, of which the unimportant part can for the most part be performed in the laboratory by our assistants.

I most heartily agree with Doctor Agostini's reply to Dr. James Truman, in which he most clearly shows that our highly respected Professor Truman is wrong when he characterizes operative dentistry as degenerating.

We look for and generally find something inspiring and

instructive from Professor Truman's pen, but we feel sad when he criticizes the clinic of the Chicago Dental Society for having on its program only three gold fillings to eleven gold inlays, and ascribes it to what he chooses to call the objectionable trait in the American mental makeup. "An insatiable desire for something new and easy."

Without serious consideration, without study of modern methods of technique and procedure, in a dogmatic fashion, he makes a sweeping condemnation of the whole system, and we can only ascribe it to the fact that he has not seen fit to apply himself in an endeavor to grasp the possibilities of this modern method of saving teeth.

All the efforts of life are open to criticism and comparison, and indeed unless we could go back to Adam and Eve and wipe out original sin, even the gold inlay must remain a relative procedure.

Relative to the personal equation, relative to our skill, relative to our energy and ability in paying heed to fundamental principles of cavity preparation, especially as refers to convenience, resistance and retention forms; factors of vital importance to the success of any tooth restoring material.

A large field remains, and will ever remain for the foil filling, but viewing all round the subject, we find the inlay and the filling subjected to many of the same weaknesses, therefore all other conditions being equal, the inlay stands both theoretically and practically the superior.

It is not right that such conclusions should be arrived at as the result of a sudden outburst of enthusiasm over a couple of beautifully placed, highly polished and well-paid-for inlays, but the conclusions are right and logical when they come as the result of trial after trial, failure after failure, the sacrifice of time, energy and effort, and then success after success.

Then the cast gold inlay takes its place as a positive proposition, then does it stand triumphant as the highest accomplishment of operative dentistry.

I cannot pass this subject without special reference to a paper by C. S. VanHorn, D. D. S., in the *Cosmos* of September last, entitled, "The Wax Pattern." It concludes a series of

articles by the same writer which have appeared in the *Cosmos* commencing in 1910, on the expanded pattern technique.

The literature of the past year is replete with excellent articles on this subject, and I append a list of principal ones for those interested.

CROWN AND BRIDGE WORK.

What comes before us as new in this department of dentistry during the past year may be said to be directly relating to the casting process.

In this connection I think that the profession owes a special obligation to a member of this Society, Dr. Hart J. Goslee, of Chicago, for the valuable work he has done in presenting to us ways and methods for the application of casting to crown and bridge work. And while I am in the eulogistic tone, I cannot pass the opportunity of reference to the fountain source of all this benefaction, for laying aside any personal consideration which any practitioner, or any court of law record may have regarding patents, process or otherwise, I am certain that all will agree that not only our profession but humanity at large owes to one man more than they will ever be able to pay, to that one man who opened our eyes to the possibilities and opportunities afforded in casting gold, you know to whom I refer, Dr. William H. Taggart, of Chicago.

The limitations of this report render it impossible for me to enter into any digest of the excellent literature that has appeared along this line of crown and bridge work, and I append a list of valuable papers.

PROSTHETIC DENTISTRY.

This subject considered in the relation that we are especially wont to regard it, namely, plate work and the construction of artistical dentures, as usual is more or less overlooked in the literature of the past year, and despite the fact that we have been hearing a good deal of late years regarding anatomical occlusion, and all that pertains to it, it remains a confessed fact that as a profession we continue to make artificial dentures on plain line articulators and hinges, and such important features as the lateral movements of the human mandible, or the com-

pensating curve of the condyloid path remain less interesting and intelligible to us than the convolutions of a skidding automobile on a slippery boulevard.

Still the work of Alfred Gysi, of Zurich, Switzerland, and Bennet, of London, and Clapp, of New York, and others, should receive the highest commendation and the literature of the past year contains considerable from the scientific minds of these men of which I append a fairly complete list for those interested.

PORCELAIN INLAYS AND SILICATE CEMENTS.

The Porcelain Inlay, that erstwhile object of hero worship by many, finds little mention last year in American dental literature, on the other hand European dental literature continues to pay considerable attention to the porcelain inlay.

Dr. N. S. Jenkins, of Dresden, in a paper read before the American Dental Society of Europe, last year, deploras the shocking dental disfiguration which still prevails in America through the use of the "Barbaric Gold and Pearl."

He says: "Proud as we are of the great intellectual, political and material achievements of American civilization, we must yet admit that in such particulars as matters of good taste, and in the general influence of the fine arts and graces of society we still defer to Europe. Among the accepted principles of European society is the rule that good taste must not be strikingly violated, but a conspicuous departure from this rule is found in the shocking dental disfiguration of great numbers of American patients."

I like these compliments to Europe by an American as I happen to be an imported article myself, but I really feel with Doctor Jenkins that many American practitioners have too easily excused themselves from learning the principles of porcelain work, because their patients have not demanded it.

The duty of every educated man is to lead and not to follow, and he who deliberately disfigures the poorest of his fellows rather than give himself the trouble of learning how to conceal his art, dishonors himself as much as his profession.

It is true, in a degree, that for business and commercial reasons the porcelain inlay has been more or less outlawed in American practice, and it is not only embarrassment which over-

comes us when patients return with inlays in their pocket-books or their stomachs, but I have seen myself, in recent visits to Europe, that it is the rule rather than the exception to find dentists students of this art, and obtaining most satisfactory and permanent results with comparative ease and scientific accuracy.

Casting porcelain still remains more or less a Will-o-the-Wisp. The best we can say is that it is in an experimental stage, and it seems that perhaps we are within reasonable reach of some interesting developments.

The silicate cements, also in an experimental stage, appeal to me as an interesting proposition. They have been developed entirely by European manufacturers until one recently placed on the market by a well-known American producer of cements.

I say they are interesting, yes, and at times very disappointing. Their use calls for a special study, for they demand a special technique in mixing and manipulation, without attention to every detail of which they will be invariable failures.

I find the opinion registered very largely in the past year by those who have tried all of them with exception of this late product of Doctor Ames, that the best results have been obtained with DeTrey's Synthetic Cement.

In cases where for different reasons they are used and indicated patients will sometimes ask, is this a permanent filling? A good reply and a truthful one is, "It may be as permanent as many a gold filling, and even if it is not, it is preferable under the circumstances to have your teeth temporarily beautiful than permanently hideous."

DENTAL RADIOGRAPHY.

Much literature has appeared last year on this subject, and it is certainly a great step forward in scientific work when we find ourselves no longer groping aimlessly in the dark for a diagnosis of obscure conditions in the mouth and adjacent parts.

Dental radiographers are producing pictures of great assistance in locating obscure lesions, to the exodontist their work is invaluable, and in root canal work it cannot but be of the greatest assistance in developing a higher standard in this particular branch.

OUR RELATIONS WITH THE MEDICAL PROFESSION.

The literature of the past year is replete with striking evidence of the strong bond which is being established between the medical and dental professions, and probably no more significant evidence is to be found than that which is given us by two papers read before the Chicago Dental Society and published in the February and April numbers of the DENTAL REVIEW.

The first by Wilbur E. Post, M. D., of Chicago, entitled, "Oral Infection in Relation to Systemic Disease." And the second by Charles H. Mayo, M. D., of Rochester, Minn., entitled, "Diseases Secondary to Local Infection."

Both of these eminent men, as well as Billings, Rosenow, Sir William Osler, Wiley, Murphy, Herrick, and many others, direct our attention to the fact that just as it has been proven that the tonsils, prostate gland, uterus and its appendages, appendix and gall bladder are foci of infections leading to serious systemic disturbances, so also the teeth and adjacent structures which are so often the seat of infectious processes, have been found to be sources of grave systemic diseases.

The process of applying the modern science of disease has revealed the fact in an alarming manner, and now our medical brothers are calling on us to equip ourselves so that we can recognize these disturbances, and thereby help the physician in his diagnosis and the patient towards recovery.

Of course, a note of warning is sounded that we must not be carried away with the idea that every alveolar abscess or oral lesion is the fountain source of present systemic disturbance, but the subject opens up a very large field for study and thought for us as dentists, and we must be impressed by this fact when the surgeon Dr. Charles H. Mayo concludes his paper by saying: "The next great step in medical progress in the line of preventive medicine should be made by the dentists. The question is, Will they do it?"

And now this brief reference to some of the literature that interests us brings me to the point that I must take up but a few more minutes of your time.

Anybody undertaking this report must be overcome by the inability to cover in a brief space of time the whole of the

vast field which our literature includes, and the most passing reference to subjects and essays of paramount importance carries with it no uncomplimentary reflection upon the scientific efforts of those who are instructing us.

In conclusion let me say that the literature of one of our specialties, Orthodontia, shows us that progress is being made by leaps and bounds, and the votaries of this specialty are to-day rightfully boasting of not only great scientific progression, but marvelous artistic accomplishment.

Dental education as applied to our colleges is being placed upon a more stable and substantial basis in reference to both teachers and students, and last and by no means least I consider it an honor to be my duty to state, it has been in the literature of the past year, that the edict has gone out that our profession has risen to the crying demand of the hour to make scientific research possible by a practical and substantial foundation.

Inspired by the unaided efforts of such men as Miller and Black and Cook and Noyes and Buckley and others, who burning the midnight oil have delved into this land of mystery, in an unselfish effort to teach us what we know, must we not open our hearts and our purses to aid this movement, humanitarian in its first and grandest consideration.

It is our mission to treat disease, but is it not our duty first to humanity and then to ourselves to assist those who by their study and research may materially lessen the incidence thereof? Yes, it is, and we shall do it. And so, as the years roll on and new generations of our profession rise up to take their places in the field that has been mown by the inevitable scythe of time, I believe that they will look back to 1912 and '13, standing out in bold relief as landmarks in our professional progression.

"Diseases of the Mouth," Prof. Dr. F. Zinsser, Lindenburg. Redman & Co., New York.

"Text Book of Human Physiology," Albert P. Brubaker, A. M., M. D. P. Blakiston Son & Co., Philadelphia.

"A Manual of Chemistry," W. Simon, Ph.D., M. D., Baltimore, Maryland. Lea & Febiger, Philadelphia and New York.

"Surgery and Diseases of the Mouth and Jaws," Vilray Papin Blair, A. M., M. D., St. Louis, Mo. C. V. Mosby Company, St. Louis.

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SOME CONSIDERATIONS OF GOLD INLAY WORK.*

BY E. D. COOLIDGE, D. D. S., CHICAGO.

In presenting the subject of gold inlays I feel that certain features of the process have had a considerable amount of attention in the last few years and so will confine my remarks to some other features of the subject that are of such importance that constant attention would be permissible. Very little is presented that is new but often the different aspects of the same subject promote thought that does generate ideas entirely new.

Let us first review some of the conditions we are called upon to consider in our practice and some of the clinical features of caries and associate them with this particular method of operative procedure.

In the first place in the careful inspection and study of caries we find its origin to be in the protected places on the surfaces of teeth where colonies of micro-organisms may locate and remain undisturbed. These protected places are found in the deep pits, in the gingival third, and on the proximal surfaces. The last, or proximal surface, is the locality to which I

*Read before the Illinois State Dental Society, May, 1913.

will confine my remarks and will limit this to the proximal surfaces of bicuspid and molars.

CARIES OF PROXIMAL SURFACES.

The beginning of caries on these surfaces is found to be just a little gingivally of the contact point and usually in the middle third of this surface. At the first it is only a narrow break confined between the contact and the free margin of the gum, spreading in bucco-lingual length in proportion to the relative size of the embrasures, and is limited by the angles of the proximal and buccal or lingual surfaces. It appears that the beginning of caries is due primarily to the physical conditions rather than chemical and is dependent upon or limited by the shape of the contact, the condition of the free margin of the gum in the interproximal space and the relative distance between the two teeth in the embrasures. "The decays in the proximal surfaces of bicuspid and molars correspond in form with the areas of 'near approach' of the teeth so closely and so constantly that we must connect these relations as cause and effect, controlling both localization and superficial form of the beginning and spreading of caries in the enamel." (Black Operative Dentistry, Vol. 1, p. 86.) Again Doctor Black tells us that unless food is allowed to collect between the teeth in question that the decayed area will keep its original form, not spreading in a bucco lingual direction except in proportion to the "near approach" of these surfaces in the embrasures. We have found by experience that the cavity whose margins are carried well to the angles of the teeth where the friction of food insures constant cleaning presents little possibility of further decay. It would seem then that the permanence of the filling depends upon three things, granting that the mechanical procedure is accurate: First—The sufficient extension of the cavity in a bucco lingual direction. Second—A proper contact with the proximating tooth. Third—A proper relation of the teeth in the embrasures. The last two requirements are dependent on the shape of the filling and the first depends upon the formation of the cavity.

EXTENSION FOR PREVENTION.

Let us see in what way these principles apply to inlay work

and study the inlay with reference to its value as a means of curing dental caries.

Proximal surface extension for prevention is a subject that is so well understood in this locality that we cannot believe any one to be ignorant of its principles nor of the advantage in the application of them, yet we see frequently the failure of carrying out of these principles and the consequences that follow in a few years. These principles apply to the teeth where caries is in its initial stages and not where it has extended bucco lingually into the embrasures. Cutting away enamel where caries has undermined it is not extension for prevention. This is as true in inlay work as in foil filling. There are some who prepare the cavity for an inlay with diverging walls and so leave the bucco lingual width much less at the gingival than at the occlusal part of the cavity. If the margins of the cavity be placed in the immune portion of the proximating surface of the tooth they will be near the axial line angles, not only at the occlusal but at the gingival, making nearly parallel buccal and lingual walls. Should the walls be perfectly parallel the wax will still draw and the inlay will have greater retentive and resistance form.

THE CONTACT AND THE EMBRASURES.

The proper contact and the right relation of the proximating surfaces in the embrasures depend upon the filling or inlay placed in this surface of the tooth. During the process of construction of such fillings these two things must be kept in mind as having as much importance as the mechanical accuracy of the filling. Upon these two things depends, to a very great degree, the possibility of recurrence of decay. If the importance of the correct contact and proper relation in the embrasures impresses our minds sufficiently to make it impossible for us to overlook the details necessary to produce them, we will have more scientific and more permanent fillings. Since decay spreads bucco lingually in proportion to the nearness of the two surfaces in the embrasures, it is our duty to so form the fillings for such cavities that they will preserve or make the proper relation. The opportunity for accomplishing this is greater, or, perhaps better stated, is easier, by the inlay

method than any other. The molding of wax into a well-prepared cavity and trimming it to proper contour is more readily done than the building of foil gold to produce such a result. When the inlay is cast and tried into the cavity there is a second opportunity to correct and make the proper contact and trim away to produce a proper relation in the embrasures. By the inlay method we are given two chances to restore the tooth in contact and contour before the filling is placed permanently into the tooth. I do not say that the proper results are always accomplished but I believe it is more often done by the inlay method than by the foil. This will become better understood and more generally practiced with continued emphasis and attention. If more attention is placed on this phase of inlay work our patients will receive greater service.

If, then, we have a given surface of tooth with a beginning decay at the usual position with the prospect of a rapid spreading in a bucco lingual direction, whatever method of curing this is employed it will be necessary to restore a proper contact and establish the correct relation between the proximating surfaces in the embrasures to prevent a continuation or recurrence of decay at some place about the filling. This we will find can be more easily accomplished and with a greater degree of certainty with the inlay than any other method of filling teeth. Since the permanence of the filling is dependent upon the physical conditions to a very large extent, it is within our power to place fillings or inlays that will have such a relation to these surrounding conditions, both present and which will develop, that we can almost always prevent a recurrence of caries, and until we do prevent a recurrence we do not have a permanent filling.

WHERE INLAYS FAIL.

There is a danger confronting the inlay method that is greater than the danger confronting the foil filling and is doubtless the cause of many of the failures in inlay work. Often times after a cavity has been carefully prepared for an inlay and is ready for the wax impression, or is thought to be, it may be found by drying the cavity thoroughly that along the gingival enamel margin a whitened area will appear, extending along a short distance in a bucco-lingual direction and may be found

on careful examination to be running in a gingival direction. This beginning decay is very easily overlooked in inlay work because the cavity is prepared without the rubber dam, and consequently under moisture, and this decay is not noticeable when moist. In the failures in inlay work that have come under my notice there are those caused by failure of the inlay keeping its place, and those caused by washing of the cement around the margin and subsequent decay at the margins, and those caused by a secondary extension or recurrence of decay.

The failures due to secondary extension of decay and recurrence are caused by a failure of the operator to observe the rules of extension for prevention in a bucco lingual direction and gingival direction. It is a failure on his part to find the beginning secondary decay extending gingivally from the broken down part of the tooth which is only noticeable when the cavity is dry. There are other considerations which may cause recurrence and those have been considered in the first part of the paper under the heading of contact and relation in the embrasures.

The failures due to washing of the cement and failures of the inlay to remain in place are due to faulty technique in some part of the procedure in the mechanical construction.

DIFFICULTIES IN TECHNIQUE.

The next considerations of inlay work I wish to mention are those encountered in the technique of waxing. This is the part of the work upon which the success or failure of the inlay very largely depends from the mechanical standpoint. Wax is very deceiving and can be the cause of great disappointment. There is a much greater risk in the change of form in the wax than there is from the shrinkage of gold in change of state. The wax is elastic and will bend and return to approximately the same position as it was originally. It will shrink when chilled and expand when heated. Again it is deceiving in its accuracy of adaptation to the gingival wall of the cavity. It is rarely ever that we see any imperfection of the fit of the inlay on the occlusal. The margins or deficiencies always occur on the gingival or along the buccal and lingual walls or occasionally all around a cavity in the gingival third.

In the latter class of cavities I believe the difficulty comes from faulty technique with the wax to a very large extent. The position of the cavity, especially on the gingival third of the molars makes it difficult to work the wax without causing it to rock and move in the cavity. This, though only of the most minute degree, would be carried on to the casting and would add to the errors of casting. After carefully trimming and burnishing the wax it is removed and invested. If the investment is of a considerable degree of temperature below the body temperature, there is some further shrinkage as has been shown by Dr. Weston A. Price. Then if the slight shrinkage of the gold, which is very slight, be added to this there are three errors to be dealt with, two of technique which we can control and one of physics which we cannot control. Of course this accumulation of error diminishes the size of the pattern and is bound to result in a deficiency around the inlay, making a loosely fitting inlay which is very difficult to keep in place.

The deficiency at the gingival of a cavity is also largely due to faulty technique. The greater the bulk of metal the greater will be the amount of contraction of the gold and the deficiency between the inlay and cavity. However, when we consider this is only a matter of 2.2 per cent it will never account for a deficiency of any great extent at any part of the cavity. So we must confess we are to blame when our inlay does not fit the cavity, for the small amount of shrinkage of the gold will not cause the inlay to fail if we do not add to this error by faulty technique. In working the wax into the cavity it must be packed against the gingival margin with sufficient force to produce a sharp and distinct outline of every part. The wax should be removed before trimming or having the patient bite for the occlusion to see if the impression of the gingival wall is distinct and that the wax has been driven into every part of the cavity. If the gingival margin has not made a clear impression in the wax and if each angle at buccal and lingual is not sharp it will be necessary to add more wax to this surface, and while soft place again in the cavity and press to place. Usually this will give the desired result but it may be removed and examined the second time. After the wax has been trimmed and carved to the proper form and burnished all around the margins it

may be removed but should not be replaced in the cavity again. If this part of the technique is performed with accuracy, then the wax removed and invested at only slightly less than body temperature the result will be dependant on the casting but not until the procedure with the wax is performed with accuracy.

The process of casting the gold into the mold is also attended with difficulties, some of which we cannot control. We may have a cast with imperfections due to faulty investing, or the cast may have round edges instead of sharp ones, there may be some shrinkage of the gold, and there may be difficulties arising from the softness of the gold.

The imperfections on the cast are usually due to air confined within the investing compound, or between the compound and the pattern, or to injury to the mold during casting. Care should be taken when the cavity is prepared to avoid all acute angles in the cavity walls which would make it possible for the gold to crush or mar the mold when forced into it. Then in investing care must be taken to free as much as possible of the air in the investing compound, and care must be taken in placing the compound over the pattern that no air is confined between the wax and the compound. These are minute details but they have great importance in producing a satisfactory result.

The round edges on the casting are due to casting before the gold is hot enough to flow properly or to removing the pressure before the gold has cooled sufficiently to prevent a drawing back. The mold should be cold when the casting is begun, the gold heated to a very liquid state and the pressure maintained a few seconds after the cast has been made. There is doubtless some contraction as the gold passes from the liquid to the solid state. Doctor Price has found it to be 2.2 per cent with pure gold. This is only a small deficiency and would not cause a failure in a small inlay unless other errors were added to it. As a safeguard the bevel of the cavo-surface angle of the gingival wall may be made greater than usual which will permit burnishing the overlap of gold to the cavity margin to protect the bevel of the enamel. In inlay work the bevel of the gingival wall is important for this compensation for shrinkage as well

ORIGINAL COMMUNICATIONS.

as for protection of the enamel rods. The large inlays would have more shrinkage and as a provision against this the inlay may be made in sections. This is advisable in a large number of the three surface inlays for it assures more accurate results. The additional time required for this sectional inlay is well spent in having a more perfect filling.

Another difficulty is one that will follow in time where pure gold castings are made for proximal cavities in bicusps and molars where the contact must be restored. In many cases the pure gold inlay may hold its shape and keep a good contact with the approximating tooth, but in many other cases there will be a wearing and crushing that will give rise to a faulty contact in time which will cause a recurrence of decay or allow the approximating tooth to be exposed to more favorable conditions for decay. If the pure gold is to be used for these cavities a precaution should be taken to flow solder over the proximal surface to build the contact and strengthen the surface to maintain its shape.

I have attempted to review some of the advantages in the inlay methods and connect them with the principles laid down for us in operative dentistry. I have also tried to point out where inlays are apt to cause us trouble and direct your attention to this side of the inlay question as well. Inlay work has been a step in advance and a step of great importance. It is a process based on scientific principles and is a scientific method of filling teeth. A thorough knowledge and a careful application are bound to bring satisfactory results to the operator. It is an abused process no doubt but who will say that any process in dentistry is not abused by some. In the hands of the careful operator it will give equally as good results as the foil method, with great saving of time and energy and inconveniences, and may be used in many cases where no other method is possible. The difficulties and errors of the process can all be met and either overcome or provided for by ingenuity and skill. Scientific investigation and experiment will provide in time materials that will be more easily handled, and by constant attention and application of the principles of cavity preparation and by greater care in handling the materials for inlay work provided for us we will have better results and our patients will be better served in the future.

THE PRESENT STATUS OF SOCIAL DENTISTRY IN ITALY.*

BY PROF. DR. MED. ARRIGO PIPERNO, ROME.

It is not my idea to speak on Italian dentists nor on the Italian school of dentistry. After the new law, which compels every new dental practitioner in Italy to be an M. D. graduate, we shall feel more and more the need of state instruction for dentistry. We have indeed a college school in Milan, The Italian Stomatological Institute. We have professors charged for dental instruction in the Universities of Turin, Genoa, Bologne, Rome and Naples. We have free teachers of dentistry in the Universities of Pavia, Florence, Pisa, Rome, Naples, but we have, unfortunately, no compulsory teaching of dentistry in our Kingdom.

I want, to-day, to speak of the oral hygiene educational movement in Italy, which is beginning to give us, as dentists, a task worthy of our profession. We cannot, of course, compare this movement with that which is spreading in Germany and other nations. Anyhow, I am glad to say that our nation begins to recognize the question and the public knows that it is about time to be given something on this subject from authoritative sources.

In all civilized states the application of the "Ounce of prevention worth a pound of cure" doctrine to dentistry has produced an awakening to the immense possibilities of oral hygiene and established the value of preventive dentistry. Prophylaxis comes first and far above the mechanical art of dentistry, which is overdone.

Give a glimpse to the statistics. They are telling us that the new active social life in the kingdom of Italy has brought us an increase of dental decay. In the levy of the military from the year 1863 to 1876, namely in thirteen years, there were 2,669 deformed young men, and from the year 1883 to 1893, that is in ten years, 4,400. Without any doubt, decay of teeth was a great factor in the deficiency of their organisms and

*Read before the American Dental Society of Europe.

health. Statistics tell us that the northern people of Italy have worse teeth than the southern. Researches in the elementary school children in Milan have demonstrated that there are 82 per cent of children affected by dental caries (Prof. Platschick); in Genoa, 73 per cent (Dr. Ragazzi); in Berlin, 67, 79 per cent (Dr. Calcaterra); in Rieti, 64 per cent (Dr. Giannini); in Leghorn, 55 per cent (Dr. Salini); in Turin, 54 per cent (Dr. Momigliano); in Rome, about 50 per cent (Piperno). I presume that in Naples and Sicily the percentage is still lower. It would be a very interesting investigation to follow the reason of that fact. All the quoted authors say that in all our schools the cleaning of teeth is generally deficient. Food and water may have a real importance. The *Acqua Marcia*, which is the greater drinking water supply in Rome, is, in fact, very rich in calcium carbonate. P. Ferrier, in his remarkable work on the relation of nutrition between the skeleton and the teeth (*Thèse de Paris*, 1900), insists on the importance of the calcium salts, and principally of the calcium carbonate. Speaking of the demoralization of the teeth, Ferrier's method of recalcification of the body in the treatment of tuberculosis has been successfully applied by G. M. Chateau in numerous cases of softening of dental caries with rapid evolution. It is natural to think that the *Acqua Marcia* in Rome is a powerful mineralizing agent and a great help in the prophylaxis of dental caries. The same may be said of the *Acqua del Serino*, the drinking water supply for Naples.

Deficiency of meat nutrition and sweet stuffs in our poor class of people and abundance of vegetables and hard bread may be another factor in the prevention of dental diseases in Italy. But we must not stop at these resources. I said that children of our schools do not generally clean their teeth. An educational campaign on that line is improving. The school is the best friend. I quote from Goethe: "A generation of adults does not care much for the reforms which concern the body or the spirit." Be wise to begin your work in the schools and you will be successful. In Genoa and in Milan they are distributing pamphlets on dental hygiene among the children of the elementary schools. As supervising dentist of the municipal schools in Rome, I am making weekly popular lectures on oral hygiene in these schools. I speak every time before an average of two

hundred boys and girls. Directors and teachers are very much interested in it. After the lecture I leave them large printed selected quotations and statements emphasizing the relation of mouth diseases to the general health. Some of these have been suggested to me by Dr. Arthur H. Merritt, of New York City. Examples:

"Did you ever hear of the conversation of natural resources? Teeth are quite as much a natural resource as are trees and waterfalls. The care of the children's teeth is a community responsibility."

"Decaying teeth do not permit of perfect mastication, imperfect mastication is the open door to malnutrition, and malnutrition is one of the greatest factors in all diseases. Clean teeth never decay."

"As a result of bad teeth and unsanitary mouths the physical development of the child is seriously retarded. The more the physical development is disturbed, the less in general is the mental capacity. The worse the teeth, the worse, as a rule, is the school standing."

"Forty per cent of the absentees from school are caused by toothache. It has been shown that children with decaying teeth are six months longer in completing the common school grades than are children with clean mouths and sound teeth. Wouldn't it pay to take care of the children's teeth?"

"The masticating power of the sound natural teeth is about 150 pounds; that of the artificial teeth does not reach 25 pounds. Why do you not save your teeth?"

"Adenoids, swollen glands and earache are often caused by neglected teeth. Is your child a mouth breather?"

Other statements concern the doctrine of mastication of Horace Fletcher, others the diffusion of infective diseases by kissing, irregularity of teeth by thumb-sucking, the importance of nasal respiration, etc.

Among the quotations:

"An American writer has said that a woman with beautiful teeth can never be considered an ugly woman." (Boyd Laynard.)

"We need good teeth to perfectly grind food." (Decuret.)

"Half of the human miseries and human sickness must

be especially attributed to the default of good teeth." (George Platt.)

"If the teeth are not beautiful, cannot be beautiful the laugh, which, when it is properly used, at times and with modesty, makes of the mouth a paradise." (Agnolo Firenzuola.)

A decalog of short suggestions for the care of the mouth and teeth is also shown and illustrated. The illustration is facilitated by a large picture, printed by Righini in Milan, containing figures on dental anatomy and pathology. In the course of the lecture I interest the young people, showing to them old printed pictures of dentistry of the past, old tooth forceps, teeth with decay or with tartar, plaster models with pyorrhea or orthodontic cases, palate and bridge work.

It often happens to me to receive the congratulations of the school children's parents some days after the lecture. This signifies that the young people remain very interested in it.

All of these large printed quotations and statements, together with the material I have spoken of, have been shown in the International Exhibition of Social Hygiene for the Prevention of Tuberculosis in Rome last year, and have been awarded the diploma of honor with a gold medal.

We do not stop at the educational campaign. The first in Italy to see the necessity of dental treatment for school children was the association "*Per la Scuola*"; for the school in Milan, which, with the co-operation of the municipality of Milan, gave the charge to the Italian Stomatological Institute to provide for the treatment of teeth to the scholars who want it. The treatment is not entirely gratuitous, because the poor children are requested to pay three francs *per annum*, and others eight francs.

In Padoa the physicians of the schools send the alumni with dental decay to a dentist expressly appointed by the municipality.

In Turin the city has been divided in five parts, where five dentists, living in the center of each zone, take care of the children sent to them by the school physicians. Only poor children are admitted to gratuitous treatment.

In Genoa the physician of the school notices and transmits to the families the condition of the teeth of every school child.

Two free dental clinics give gratuitous treatment for the poor.

In Rome children who need dental treatment are sent by the school physicians to the Central Municipal Dispensary, where, in a free dental clinic, I give, every Thursday afternoon, the necessary treatment. On that work I follow Dr. George Cunningham's ideas: "*Temporary teeth; let them go. Temporize and assuage. Concentrate on the molars and a clean mouth.*" As a filling material for the permanent molars I use copper amalgam.

An improvement in the oral prophylaxis campaign in Rome has been made this year. I wanted to introduce among the school-children in Rome the tooth-brushes of the Dental International Federation, furnished cheaply and of good quality with the permission of Prof. Jessen of Strassburg, President of the Hygiene Commission of F. D. I. The municipal department for the schools (sixth office) has now charge of the affair, and we hope to soon be able to furnish tooth brushes to all the poorer school children of the Italian capital.

We have no dental surgeons in our army. The valuable services which they have rendered in the United States has proven their need. Still we have two very well equipped dental clinics in the military hospital of Monte Celio in Rome and in the post-graduate military school for physicians and surgeons of the army in Florence. In the first hospital, in the year 1907, Captain Dr. Perna treated 1,492 soldiers, giving about 4,327 visits. (*Dott. A. Perna, L'Odontoiatria nell'Esercito.*) The number is increasing in later years. In Naples, Dr. Guerini offers his efficient help for the military of the army. He has related his work in three interesting publications, one in the year 1898, one in 1904, and the last in the year 1910, in which he calls the attention of the superior military authorities to the necessity of a regular dental service in the army.

We hope that our government and our Italian municipalities will feel the necessity of spending more money for the treatment and prevention of dental diseases. We are sure that improving our educational campaign we will find in the entire people of Italy a fountain of health and richness.

ORTHODONTIA AND THE ROENTGEN RAY—TWO CASES.*

BY DR. H. H. BETHEL, WIESBADEN.

The Roentgen ray, that invaluable adjunct to science, has extended our power of vision to such a degree that the diagnosis of hitherto invisible parts is now, where the rays are applicable, based upon absolute knowledge.

Dentistry affords these penetrating rays practical application in the diagnosis of orthodontia cases. And it is the object of this paper to describe two cases which required their aid. One proved a success, the other a failure.

I shall first invite your attention to the case in which the diagnosis was complete and the Roentgen examination convincing. It was that of a girl seven years old, physically somewhat underdeveloped and backward. I first saw her in June, 1908. The teeth were of the Hutchinson type. The dimensions of the dental arches were much under normal. Owing to the tardy eruption of the first permanent molars and their pitted deformities, I could not insert the expansion arches. Through Dr. Northcroft, a former member of this society, my attention had been called to Badcock's regulating device, a form of jack-screw which can be vulcanized into the palate of a plate. The plate is sawed longitudinally, i. e., split, and the whole can be very easily manipulated by the patient. The upper arch was gradually expanded with such a plate. The articulation was a full tooth distal of normal, and there was a very pronounced and disfiguring protrusion of the upper incisors.

There was a hidden factor militating against the normal progress of development. My suspicions were not directed to the true cause of the underdevelopment, as the temporary teeth were still in place. The difficulties which the case offered to the insertion of molar bands and expansion arches was responsible for my deciding to wait and watch the progress of the permanent teeth in erupting before finally taking the case in hand.

*Read before the American Dental Society of Europe, March, 1913.

And it was not until some months after the upper right deciduous molar had been lost that I suspected an entire absence of the permanent tooth which should have replaced it.

In April, 1912, I had the child's head Roentgened. It was impossible to get successful photographs with small films held in the mouth for the individual teeth, as the space for manipulating the enveloped film was insufficient. The head was, therefore, photographed entire. The child lay on a sofa with the head resting on a sensitized plate. First right, then left, and



then from a direction which permitted the rays to penetrate under the chin and to one side was the order of the exposures. The results showed the absence of the upper right and left second bicuspid, and the lower left second bicuspid. The lower right second bicuspid was normal.

The missing teeth had to be supplied. Bridge work was indicated. The Badcock split plate and screw had effected some expansive aid in the general advancement of the upper,

and only a little more width in the region of the upper cuspids was necessary to accommodate the lower cuspids mesially of them in normal articulation. And through expansion the curves of the upper and lower arches approach gradually their normal apposition, so that in cases where the patient's profile permits the lower jaw will bite a full tooth mesially, thus seeking its normal articulation and establish definitely the same. When this occurs the molars no longer articulate, the articulation



generally starting at the second bicuspid of the lower, and the molars must be elevated.

In the case under consideration, this jumping of the bite occurred in four weeks' time. The profile was the immediate talk of the child's family and friends. The lips now closed, and the rapid and gratifying transformation was astonishing. The complete reduction of the remaining protrusion of the upper incisors was a simple matter of pressure. There was

now no resistance. The jumping of the bite had raised the bite.

The lower incisors no longer bit on the gum back of the necks of the upper incisors. The necessity for bridge work to supply the missing teeth and the relatively concave surface presented by the biting plane, accentuated by the depression of the first permanent molars, made me feel it would be futile to undertake a regulation of the teeth according to the prescribed formula for class II., division II. cases, according to Angle.

The arches above and below were used. The upper arch was carried by gold crowns on the upper first molars, which opened the bite and freed the teeth anterior to them of articulation, thus doing away with all resistance to the regulating appliances and rendering the work more rapid and easier. This was done in anticipation of jumping the bite, which had previously been decided upon as expedient. The lower arch was carried as usual by D bands on the lower first molars. The interdental rubbers were employed to aid the tendency, and as soon as the expansion above and below in the region of the cuspids had brought the teeth of the upper and lower arches into proper juxtaposition the lower jaw sought the normal articulation and retained it without further intermaxillary retention, particularly inserted as such.

The expansion was retained and the permanent bridges inserted. The lower left second bicuspid was supplied as a dummy attached to a gold cap on the lower left first molar, and the upper right second bicuspid was supplied with a similar bridge supported on the upper right first molar. These bridges gave the necessary elevation to the molars, and acted as a permanent intermaxillary retention. The Roentgen photographs and models that have been passed will illustrate the case in its various stages. This case was a distinct success for Roentgen photography and another proof of its invaluable aid to us in basing our diagnosis on fact.

I shall beg your further indulgence for a few moments while I cite the principal details of a second case in which the Roentgen ray did not prove successful in assisting the diagnosis. The case was that of a boy eight years old.

He was brought to me to see if anything could be done

for the upper central incisors, which were so loose that it was necessary to make a splint of four bands and attach them to the laterals before treatment could be undertaken. There was a continual flow of pus from the alveolae and the peridental membrane had been destroyed as far along the root as one could probe.

The child had been in the hands of a non-graduate dentist some two months before, and this individual had made an unsuccessful attempt at regulating these two teeth. As a consequence they began to loosen. The gum, I was told, had turned



black and after iodin had been applied several times with no signs of an improvement setting in, the mother had decided something more radical should be done.

I at first suspected the presence of a rubber band, but could find nothing with my instruments. Then I had the front of the mouth Roentgened. The photographs showed nothing. I treated a flow of pus with protargol injections into the pockets (20 per cent strong), and at the end of two weeks had accomplished nothing. I decided I would have a nose and throat surgeon look at the case, as I could not stop the pus. He tested

the blood and the pus, but neither gave evidence of an infection. He could discover no foreign body, but concluded that necrosis had already set in, so it was decided to operate. The result of the operation was not gratifying, for when the teeth came away a rubber band encircled their apical ends. They had virtually been exfoliated, only a shred of peridental membrane remaining. The case was one full of interest, principally on account of the extreme youth of the patient and the desperate condition in which I found the teeth. It would not be appropriate to present this as a warning to this society or any body of intelli-



gent men, and it is regrettable that our noble profession should sometimes suffer in the eyes of the public through such abject ignorance on the part of unqualified men whom the law tolerates.

This case was a sad failure.

And I can only attribute the failure of the Roentgen pictures establishing the presence of the rubber band to the fact that the rubber contained too small a percentage of mineral matter, and that the area of inflammation and the rubber offered so nearly the same amount of resistance to the passage of the rays that any difference of the intensity of exposure was afterwards indistinguishable on the developed films.

As proof of this contention I offer two films. One shows a similar rubber band in a crystal full of water. The other shows the extracted teeth with the original rubber band in place as it was found upon operating. Water offers for experimental purposes about the same resistance to the passage of the Roentgen rays as the soft tissues, and consequently, for the sake of comparison, the shadow cast by the water on the film is equally dense. From these films which I offer for your examination it will be seen that the rubber band alone in the water is quite well distinguishable; that the rubber band which encircles the teeth can also very faintly be seen. As, however, the apices of the teeth were surrounded by inflamed tissue and exudations, all traces of the rubber band were obliterated in the original films, which you also have before you for comparison.

For the Roentgen work on these cases I am indebted to Dr. Alban Kohler I. Vorsitzender der Deutschen Roentgen Gesellschaft, 1912, and corresponding member of the American Roentgen Ray Society, who took a personal interest, especially in finding out why the rays had failed in the second case.

THE FIRST TWENTY-FIVE YEARS OF THE NORTHERN ILLINOIS DENTAL SOCIETY.*

BY DR. E. H. ALLEN, FREEPORT, ILLINOIS.

I feel somewhat at loss to know just how to present the past quarter of a century in a way that will at the same time be reasonably entertaining and moderately instructive. There are those present, perhaps, who might never know how this society happened to be unless this or a similar paper were presented.

It seems fitting at this time that such a paper should be read, and I trust that I will be able to entertain you sufficiently to the end that you may not enter the slumber roll. I shall show you, in their order, lantern slides of those who were largely instrumental in the conception and organization of this society; and the men who have been president, with one or two exceptions, of whom I have not been able to secure a photograph.

*Read before the Northern Illinois Dental Society, October, 1912.

In his annual address before the Illinois State Dental Society, in session May 11 to 14, 1886, at Rock Island, President Thomas L. Gilmer of Quincy (now of Chicago) said: "I am a firm believer in united effort; consequently am an advocate of the multiplication of societies. There should be at least a half dozen in the State of Illinois." Dr. Gilmer stands in the front rank of the dental profession, one of the kindest, gentlemanly men I ever knew, and I am sure all will join me in saying, "To know him is to love him."



Dr. T. L. Gilmer.

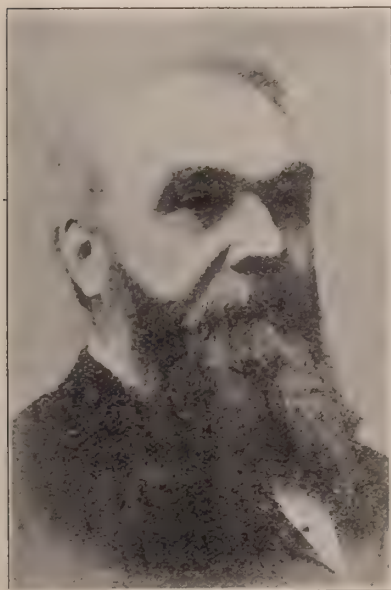


Dr. Garrett Newkirk.

In the discussion which followed, Dr. Garrett Newkirk spoke of the organization of the Central Illinois Society and said: "I hope some action will be taken in this meeting looking toward the organization of such societies." Dr. Newkirk now lives in Pasadena, California. He is one of the most earnest advocates of a high standard in dentistry we have—a man of fine Christian character.

Dr. George H. Cushing ("Uncle George," we called him), was one of the grandest men it has ever been my privilege to

know. No man has left a stronger impression on the dental profession than he. Dr. Cushing loved high ideals and he taught them. He loved truth, and despised deceit and hypocrisy. Dr. Cushing was particularly kind and courteous in his manner toward the young men. Dr. Cushing thought the proper way was to appoint a committee from this society with express reference to secure the formation of local societies in the State. Dr. Cushing then made a motion that a committee of three be appointed to devise means to secure the formation of local



Dr. Geo H. Cushing.



Dr. Edgar Swain.

societies throughout the State, the committee to report at this meeting. Motion seconded and carried. The President appointed Drs. Cushing, Swain and Marriner as the committee on formation of local societies. This committee recommended that the State be divided into districts and this part of the State to comprise the Northern District.

Dr. Edgar D. Swain was one of the old guards from Chicago and in his day enjoyed a reputation as a good operator that was not confined to Chicago or this State. Dr. Swain had his

faults, like the rest of us, and certainly not more. He was a genial gentleman, though more difficult to know and approach than Dr. Cushing. He certainly had a big heart.

Dr. J. Frank Marriner of Ottawa was a man who was difficult to know, but when you understood him you found a man with a great fund of dry humor which he expressed in few words.

Dr. Newkirk related to me an anecdote of Dr. Marriner one day while returning from the State meeting at Peoria on



Dr. Frank Marriner.

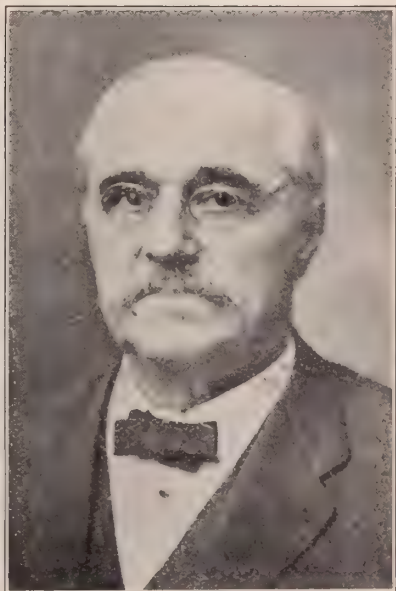
a C., R. & P. train. We had just passed a farmhouse. Dr. Newkirk said: "I started out in life to practice medicine and made my first call at that house, and I was passing here once in company with Frank Marriner and told him of the incident. Marriner replied, with a perfectly sober face, "Who lived there afterward?"

Dr. Marriner was an expert tool and instrument maker, and a man's man. All of these three men on this committee have passed on into the life eternal, but we who are left here yet hold them in loving memory for the good they did.

Dr. C. A. Kitchen of Rockford, now deceased, was appointed a member of the organization committee to assist in the organization of this society to take such steps necessary to attain that end. In due time a call was issued to the dentists in this district for a meeting of organization at Rochelle, December 7, 1886. I remember this day as a beautiful, sunny winter day. The meeting was held in Masonic Hall and called to order at 11 o'clock a. m. by Dr. Kitchen. Dr. F. C. Gill of Rockford was elected temporary chairman and Dr. A. B. Elmer of Rochelle



Dr. C. A. Kitchen.



Dr. Frank Gill.

as temporary secretary. By motion, which carried, temporary organization was made permanent. Dr. Marriner read the call for the meeting. Dr. T. W. Beckwith of Sterling made the motion that the chair appoint a committee of three to draft a constitution and by-laws. Motion prevailed. Chair appointed Drs. Newkirk, Hanaford and Taggart as this committee.

Dr. Marriner made motion that a committee of three be appointed to nominate officers, which motion prevailed, and

the chair named Drs. Marriner, Kitchen and Beckwith as this committee.

Right here someone got hungry and moved adjournment until 1:30 p. m. Motion prevailed without a dissenting voice. The tavern had a good dinner that day. I remember that the roast duck was fine and other things were up to the standard.

The Committee on Constitution and By-Laws got busy and by the time the meeting was called to order at 1:30 they had written all the articles of the constitution and by-laws and put it up to us at the meeting and we put it through. Going some, wasn't it? And they didn't miss the dinner, either!

The Nominating Committee reported as follows: President, A. B. Elmer, Rochelle; Vice President, A. E. Kennedy, Morrison; Treasurer, W. C. Bunker, Oregon; Secretary, O. H. Smith, Sycamore. Executive Committee, A. N. Stone, Elgin; F. C. Gill, Rockford; A. W. Wimer, Rochelle. Publication Committee, W. H. Taggart, Freeport; M. L. Hanaford, Rockford.

It was decided to hold the next meeting in Rockford on the third Wednesday in February, 1887. Twenty-two signed the roll of membership. These constitute the charter membership. In this we have the conception and birth of the Northern Illinois Dental Society and now we will watch its growth.

Rockford, February 16 and 17, 1887. The Society met, called to order by President A. B. Elmer, who read his first annual address. This address was discussed at some length. Publication Committee presented constitution and by-laws printed in pamphlet form. It was decided to change time of meeting to the second Wednesday and Thursday of October each year. Clinics were held at 1:30 p. m. in the office of Drs. Gill on East State street. The Supervisor of Clinics does not state what was done at the clinic, but the writer remembers putting in a gold filling for someone in a proximal cavity in an upper bicuspid. No doubt it is somewhere else.

Dr. Dennis of LaSalle read a paper subject unknown, but freely discussed. Ditto Dr. Hanaford. Elgin won out on the toss-up for next meeting; old officers held on; membership increased by eighteen.

Elgin, October 12 and 13, 1887. Meeting called to order by Dr. A. B. Elmer, who read his address for the second time,

but not the same one he read at Rockford. The Society, being under good discipline, indicated no signs of restlessness. The number of papers read was greater than at the previous meeting, discussing the subjects of that day. There were more clinics and of a greater interest than at the previous meeting. Only four members were gained at this meeting.

Election of officers resulted in the choice of Dr. J. W. Cormany of Mt. Carroll for President and Freeport the choice for the next meeting.



Dr. A. B. Elmer.

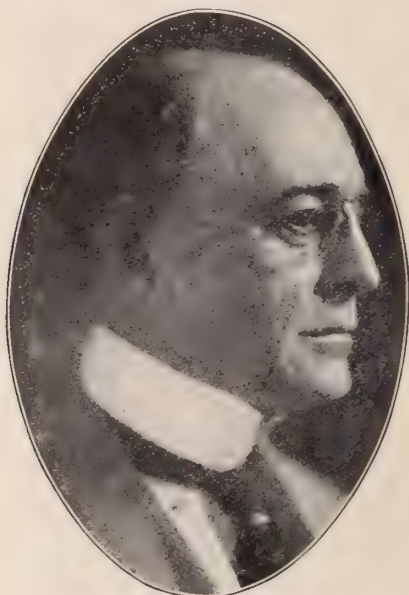
Freeport, October 10, 1888. Meeting called to order by President J. W. Cormany of Mt. Carroll. Fourteen members responded to the roll call. President read his address. This was most carefully prepared, he having spent the intervening year in its preparation. It was, up to that time, the crowning effort of the doctor's life. Indeed, it was a masterly effort. This meeting was a marked advance over any previous meeting in the quality of its papers and clinics.

Dr. G. H. McCausey of Janesville, Wisconsin, read a paper

on "Inflammation," which he demonstrated at the clinic on the foot of a frog with the microscope, using acetic acid as an irritant.

Beginning with this meeting the papers were given to the Dental Review for publication. Telegram from the Central Illinois Dental Society conveying congratulations, which was responded to in like manner by the Secretary.

Implantation of teeth was in the limelight at this time. Dr. Ottofy performed this operation for one of the inhabitants



Dr. W. H. Taggart.

of Freeport at this meeting. The implanted tooth remained in position as long as a few months.

Cast aluminum plates was the idea at this time. The Carroll process was used. The writer made a cast, which was successful only in part. Thirteen new members joined.

Dr. W. H. Taggart of Freeport and M. L. Hanaford of Rockford elected President and Vice President, respectively. Sterling selected for next place of meeting.

Sterling, October 16, 1887. President W. H. Taggart of Freeport called the meeting to order at 10 o'clock, roll call show-

ing fifteen members present. Dr. Dennis, chairman of Executive Committee, presented the program as his report, which was adopted as the order of work of the meeting. This was the most successful meeting yet held by this Society. Including the President's address, ten papers were read and discussed, embracing pathology, operative and prosthetic dentistry. Nine clinics were given, namely, gold crown; implantation; root treatment and immediate root filling; filling with gold and platinum, crystalloid gold; porcelain, crown; copper amalgam; taking im-



Dr. G. W. Dennis.

pressions and bites, and porcelain inlay. Six new members were added to the roll. Rockford was selected for the next meeting, and Dr. G. W. Dennis of LaSalle elected President.

Rockford, October 15, 1890. Meeting opened at 10 o'clock in Armory Hall by the President, G. W. Dennis. Executive Committee presented the program, which was adopted. President read his address. Incidents of office practice was made a feature and brought some discussion. Twenty-two responded to roll call; nine new members received and three corresponding

members. Eight papers, embracing the subjects of crowns, fillings, root canals, development of the teeth and post-graduate study.

Dr. McCausey's paper, "Development of the Teeth," was illustrated by lantern slides. Dr. C. P. Pruyn presented the claims of the Dental Protective Association for the first time before this Society and secured thirteen new members. The record makes brief mention of clinics by saying "that clinics were the order of Thursday morning."



Dr. M. L. Hanaford.

Election of officers and next place of meeting resulted in choice of Dr. M. L. Hanaford as President and Elgin for the next place of meeting.

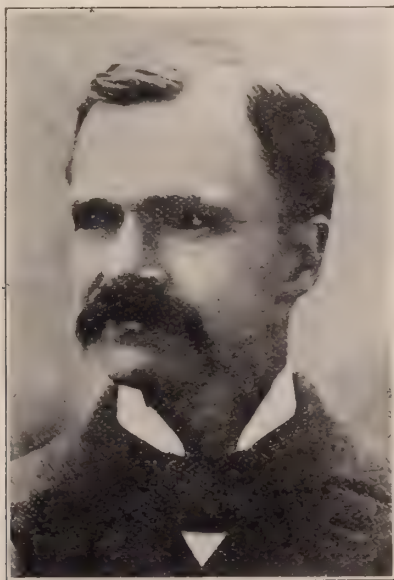
Elgin, October 21, 1891. Meeting called to order by President Hanaford at 10 a. m. Program presented by Executive Committee adopted. Committee appointed at last meeting at Rockford to consider the feasibility of publishing the proceedings of this Society, with power to act, reported that at the present time they did not consider it advisable to publish the

proceedings, as the expense involved would be too great for the Society to incur at this time.

Amendment to by-laws offered the last year increasing annual dues to \$2.00 was lost.

Eight papers were read, but none were out of the ordinary line. No mention of any clinics. Eight new members added to the roll. Dr. E. J. Perry of Chicago elected President and Rockford the choice for meeting.

Rockford, October 26, 1892. Dr. Enos J. Perry of Chicago



Dr. E. J. Perry.

let fall the gavel with a thud at 11 o'clock that commanded silence and the meeting was on. Fourteen responded to roll call. Program adopted. President Enos Perry read his address, while Clint Helm held the gavel in his right hand and sat in the big easy chair with a pleased smile on his face.

Dr. Hanaford read a paper entitled "The Dentist a Hobbyist." This was the opening Jim Cormany was looking for, so he got on for a ride and he stayed. Eight papers were read and three clinics given. Seven new members elected, and forty members reported present during this meeting.

World's Columbian Dental Congress Committee appointed as delegates from this Society to attend the congress in Chicago next year and report to the Society at next meeting. It follows: Dr. J. W. Cormany, chairman; C. J. Underwood, Elgin; M. R. Harned, Rockford; C. W. Cox, Batavia; T. W. Beckwith, Sterling; C. B. Helm, Rockford; A. B. Elmer, Rochelle; G. W. Dennis, LaSalle; W. H. Taggart, Chicago.

Aurora selected for next place of meeting. E. R. Warner of Chicago elected President.



Dr. E. R. Warner.

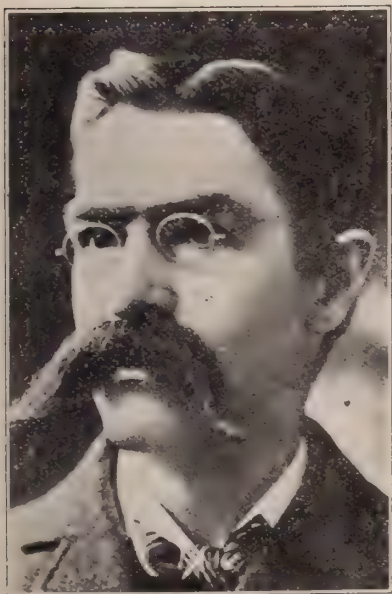
Aurora, October 17, 1894. Meeting called to order by Vice President Chappell of Elgin, the President, E. R. Warner, having removed to Denver. Dr. Chappell read the annual address. This meeting was the largest yet held by the Society. On the last day forty-seven responded to the roll call. Twenty-four new members were elected.

For the first time it was necessary to appoint a Committee on Necrology, Dr. G. L. Boyington of Marengo having passed beyond since the last meeting. At this meeting a resolution

was passed that the journal that published the papers read before the Society should send each member a copy of all such papers, together with proceedings, bound in pamphlet form.

No mention was made of clinics, except that clinics were held Wednesday and Thursday afternoon until 3:30. Rockford next place of meeting. Dr. T. W. Beckwith elected President.

Rockford, October 16, 1895. Meeting opened at 11 o'clock by President T. W. Beckwith of Sterling. Twenty-two answered to opening roll call. Eleven new members added to the roll.



Dr. T. W. Beckwith.



Henry Gill.

Dr. C. L. Snyder was elected corresponding member from Singapore, but there is no record of the doctor corresponding with the Society to any great extent.

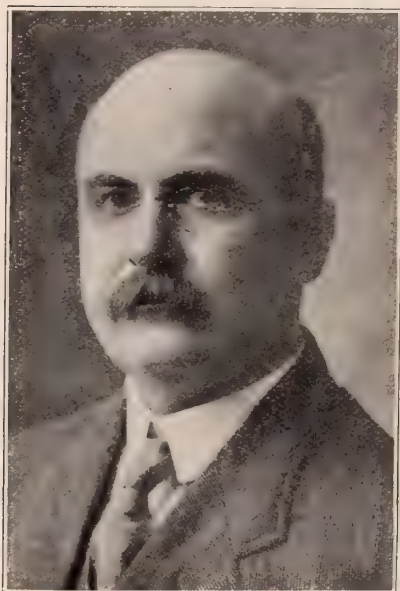
Secretary's report showed eighty-two members in good standing. No mention of clinics, except Dr. Taggart's, and the record does not state what the doctor's clinic was.

Dr. Henry C. Gill of Rockford was elected President for the ensuing year, and the Society adjourned to meet in Elgin in 1896.

Elgin, October 21, 1896. Meeting called to order by H. C.

Gill of Rockford. Twenty members present at opening and thirty-five at the closing. Only three new members elected. This meeting was reported better than any previous meeting. Dr. M. R. Harned acted as Secretary pro tem in place of Dr. Cormany. The papers were on interesting topics, varied and of high character. The same may be said of the clinics. The Society donated \$75.00 to Dr. G. V. Black of Jacksonville to assist him in his research work.

Cataphoresis was demonstrated for the first time in this



Dr. E. H. Allen.



Dr. C. B. Helm.

Society by Dr. W. V-B. Ames. E. H. Allen of Freeport was elected President and Society adjourned to meet in Rockford in 1897.

Rockford, October 20, 1897. Meeting called to order by President Allen at 10 o'clock a. m. Secretary's roll call showed membership of eighty-six, seventy of whom were absent. Six new members elected. This was a good meeting; papers read were on subjects of interest. They would be good reading to-day. Clinics were interesting and instructive. The first surgical clinic of the Society was given by Dr. T. W. Brophy

of Chicago, who operated for cleft palate at the Rockford Hospital. Wednesday evening Charles B. Lyman demonstrated hypnotism, and Dr. Sowle and trio gave a small concert. Society elected Dr. C. B. Helm of Rockford, President, then adjourned *sine die* to meet in Rockford, October, 1898.

Rockford, October 20, 1898. The meeting was called to order by the President, C. B. Helm under favorable auspices at 10 of the clock a. m. Secretary called roll and discovered that sixty of the eighty-eight members were conspicuous by



Dr. G. V. Black.

their absence. Five new members elected, including Dr. G. V. Black of Chicago, who was made member without dues. For me to attempt to say anything about a man so well known, so much loved and so implicitly trusted as Dr. G. V. Black seems futile. He is the grand old man of the dental profession. Is he not?

The papers read were up to the standard of any preceding year. Special mention should be made of Dr. G. V. Black's lecture on "Extension for Prevention." Clinics were good and varied in character. After electing Dr. C. W. Cox of Batavia

President, the Society thought best to meet at Elgin next year.

Elgin, October 18, 1899. Meeting called to order by President C. W. Cox of Batavia. After program for the meeting had been read and adopted, the President read the annual address. Five new members added to the Society and forty-eight members were in attendance.

The papers were of unusual interest. Dr. C. E. Bentley of Chicago, who seems to be somewhat of a pioneer in introducing the needs of dental inspection and service in the public



Dr. C. W. Cox.

schools, read a paper entitled "The Need of Dentistry in the Public Schools."

Dr. Charles J. Sowle recited a poem about a big boy named Brown, which was received with laughter and applause. The clinics were of good number, interesting and well performed.

Drs. S. F. Duncan of Joliet and J. W. Cormany of Mt. Carroll, appointed by State Society to consider the redistricting the State into Northern, Central and Southern Districts, made explanation to this Society regarding the plan and it was discussed to some extent, but no action taken.

Dr. O. H. Chappell of Elgin was elected President for next year and Aurora the place.

Aurora, October 24, 1900. President O. H. Chappell opened the meeting. Thirty-two members present at opening. Six new members elected. Papers were good and a goodly number of them. Particular mention should be made of Dr. Cormany's paper, entitled "Success or Poverty Conquered." It made some stir! The clinics were seven in number. Porcelain crowns and inlays demanded more attention than any other subject.



Dr. W. C. Bunker.

Dr. Brophy's clinic on "Double Cleft Palate" deserves special mention. Dr. A. W. Harlan gave his impression of the International Dental Congress just closed this summer.

Election resulted in the choice of Dr. W. C. Bunker as President and Joliet the place to meet. Total membership, 102.

Joliet, October 16, 1901. In most respects this was the most successful meeting held by this Society up to this time. In attendance, seventy-five answered the roll call and thirty-one new members elected. The meeting was called to order by President W. C. Bunker of Oregon at 9 o'clock.

President read his address and then the Society went to the penitentiary (as visitors), which was enjoyed by everyone—when we got out!

Executive Committeeman Dr. Sowle did not get his program accepted until the afternoon session; though somewhat tardy, things began to hum when we started. The papers were fine. Special mention should be made of Dr. Hanaford's paper on "Root Canal Filling," illustrated by lantern slides of fifty root fillings made by different dentists, who undoubtedly thought the doctor their friend, but when we saw our root filling in the "limelight" we felt like 30 cents. The writer hadn't the nerve to take part in the discussion.

In the clinics, porcelain again held sway. As a matter of fact, dentists were almost ashamed to own to making a gold filling. At this meeting the pamphlet for distribution among our patients containing "things patients ought to know" was conceived, and a committee appointed to bring it into existence.

Election of President resulted in the choice of Dr. Charles J. Sowle and Rockford the place to meet. You can bet when a Rockford man is elected President the bunch generally contrive to have the meeting at Rockford.

Rockford, October 15, 1902. Meeting called to order at 10:30 by the President, Dr. Charles J. Sowle of Rockford. This time the Executive Committee did not present any program; at least no record is made of any, but the meeting went on just the same and the program came from somewhere—a very good one, but had no special features, except that Dr. Hanaford again humiliated us by showing those old root fillings again that we looked at last year. He would do it again if he had the opportunity. We had thirteen good clinics. Since the last meeting Dr. Thomas W. Beckwith of Sterling and Dr. A. E. Kennedy of Morrison, both charter members, and Dr. W. T. Morris of Forreston and Dr. H. B. Barber of Naperville have obeyed the call and passed into eternal rest. Resolutions of respect were passed in their memory. New members received, seventeen, making total membership 138. In the election, Dr. F. T. Bell of Aurora ran the fastest and received the honor. Freeport looked good and Society said "We will go there next year."

Freeport, October 21, 1903. "The Presidential Special"

from Aurora was late, as the locomotive cast a shoe or something else, consequently President Bell did not sound the gavel until 1:30 of the clock p. m., but we went some when we started.

President Bell read his address, then the Executive Committee got his program adopted by the Society. It is not possible, I suppose, to have the program topnotch year after year. Conditions, of course, are not always the same, and this was one of the years when conditions were a little off. I do



Dr. F. T. Bell.



Dr. C. J. Sowle.

not mean by this that the program was not good, because there was much of value. The clinics were good, though on account of failure of electricity no power could be had.

Dr. Cormany, chairman of Pamphlet Committee, appointed two years ago, was ready to report, which was accepted and \$100.00 was appropriated to defray expense. Twenty new members were received into membership and seventy-four total attendance. A. W. McCandless of Chicago was choice for President and Sterling for next place of meeting.

Sterling, Illinois, October 12, 1904. Meeting opened by President A. W. McCandless at 10:30 of the clock in the morning. Dr. C. L. Snyder, who had spent sleepless nights and wakeful days, almost sweat drops of blood getting up his program, slipped it over onto the Society, which swallowed it hook and all, and it was a good one and very interesting.

Dr. C. B. Helm's array of clinics were fine, instructive and varied in character.

Dr. Cormany reported yet and again about those pamph-



Dr. M. R. Harned.

lets for distribution. Eighteen new members joined; sixty-five in attendance. Committee on Necrology reported that Dr. H. C. Gill of Rockford had passed away since our last meeting. Resolutions of respect were adopted. Election held resulted in choice of Dr. M. R. Harned of Rockford as President and Elgin place of meeting.

Elgin, Illinois, October 18, 1905. Usually the program presented by the Executive Committee includes the President's address, but this time M. R. Harned, the President, called the

meeting to order at 10:30 in the morning and railroaded his address through ahead of Frank Cheeseman, who was sitting there all primed with his program that had cost him tremendous exertion. Vice-President Snyder was in cahoots and wouldn't see Frank Cheeseman waving his program, which was one of the few times when Rockford and Freeport pulled together. Dr. Snyder got what was coming by having to sleep in the police station that night.

Executive Committee's report adopted valuable and instructive papers.



Dr. F. E. Cheeseman.

Committee on Necrology reported the passing of Dr. J. W. Slonaker of Chicago, Dr. J. S. Baird of Joliet and Dr. F. R. Richards of Chicago. Resolutions of respect were adopted. Thursday morning, 9:30, clinics. Dr. Chappell, the supervisor, surely had a good time. All were up with the time and all were high class. Supervisor made report that twenty clinics were held. Seven failed to put in appearance. In all, this was one of the best meetings ever held. Twenty-one new members

received. Dr. Frank E. Cheeseman of Chicago elected President. Aurora the place we meet.

Aurora, October, 17, 1906. We were shaking hands and exchanging annual greetings. Jim Cormany was telling a story alleged to be funny when Dr. Frank E. Cheeseman, President, ordered us to sit down and be still. He was going to start his eloquence flowing, but that smooth Dr. Hanaford put in his program report, which we, the people, adopted as official. The President then let go and gave us a real good talking to. It did us good. Dr. Hanaford deserves praise for his excellent program. The papers deserve special mention and Dr. Robinson's list of clinics were seventeen in number, and all were good—good as the papers, praise be Robinson! Though Dr. C. R. Taylor of Streator was not a member of this Society, he was such a lovable man, so earnest in his practice of dentistry, a man of highest ideals, that it was desired that some tribute should be paid to his memory. Accordingly a committee was appointed to draft resolutions of respect, which were subsequently adopted by the Society. Twenty-one new members received; eighty-three present at this meeting; 155 in good standing.

It was voted to pay Secretary Harrison for his services, which he positively declined with thanks. Remarkable! The Secretary was not pressed to accept.

Dr. C. L. Snyder of Freeport was elected President for next year. I think everyone was pleased to see the doctor pleased. Meet in Rockford, 1907.

Rockford, October 16, 1907. This meeting, like most of the others, was a real live one. You couldn't expect anything else with Dr. C. L. Snyder President.

Dr. Isaac Benjamin Carolus of Sterling, Program Committee, and Dr. Jim Elezer Harned, Superintendent of Clinics. Forty-eight answered to roll call. Program was presented and accepted.

Since our last meeting Dr. Frank C. Gill passed away. He was a most lovable man, devoted to his wife and family and friends, who were many. He was a rugged character and had such a warm heart. Dr. Gill was a charter member of this Society and was a loyal and regular attendant. A committee

to draft resolutions of sympathy and respect was appointed, whose report was adopted.

In securing the passing of the "Clark Dental Bill" by the Legislature, the Illinois State Dental Society had gone in rather deep in the hole. This Society voted \$100.00 to help out. The Vice President being absent, the writer was called to the chair while the President read his address. Perfect order and silence was obtained. Then followed the papers. I wish time permitted mention of the papers; they were all good and were well



Dr. C. L. Snyder.



Dr. A. M. Harrison.

discussed. The clinics were very good, embracing many practical subjects. One hundred and three active members present and nineteen new ones received at this session. Election resulted in choice of A. M. Harrison of Rockford, President, and Freeport the place to meet.

Freeport, October 21, 1908. President A. M. Harrison in chair. This meeting was characterized by the excellence of its papers, discussions and clinics. It is impossible, in the time allotted, to mention every paper; indeed, many were perfect. Mention should be made of Dr. A. D. Black's paper, "The

Post-Graduate Class of the Illinois State Dental Society." Everyone knows that Dr. Black puts his best into his writing and this was no exception. Dr. Hanaford's discussion of the paper deserves honorable mention.

Prophylaxis in its present-day meaning was presented by Dr. A. F. James for the first time before this Society. More than once an effort has been made to have the discussions taken by a stenographer, only to fail. Dr. Cormany tried to put it over this time, but without result. It seems not quite the thing to announce a clinic like this: "Extracting Using Aces-toria," which is a proprietary article, advertised as the one local anesthetic that don't cause any harmful results. Two clinics of Ascher's artificial enamel were given. I doubt if the same ones would repeat the operation to-day with the same material.

One hundred dollars was given to help defray the expenses of the post-graduate course of study of the State Society.

It was voted to have a banquet next year. These occasions are all right in promoting the social side of the acquaintances we make from year to year, and renew and strengthen the old ones.

Fifty-eight members were present at the opening session; largest of any meeting yet held. New members received, nine. Present at session, seventy-nine. Total membership in good standing, 157. Dr. H. G. Logan of Aurora elected President for next year and Elgin the place.

Elgin, Illinois, October 27, 1909. President H. G. Logan of Aurora called meeting at 10 o'clock. Dr. A. M. Harrison appointed Secretary pro tem, to act for Dr. F. H. Bowers of Freeport, who was elected last year. By way of explanation, in justice to Dr. Bowers, I would say that on account of Elgin being filled by a "Grocer's Convention" the regular time of the meeting of this society, we were put off a week. This put Bowers in a sorry plight, as his wedding day was set for the 27th. Poor Bowers! We at Freeport urged him to bring the wife with him and perform the duties of his office, but I think Mrs. Bowers said "No!" And that settled it. But when we see Dr. and Mrs. F. H. Bowers and daughter Mary Elizabeth walking home after the office is closed in the evening, we think they are pretty fine, at least so think Dr. Snyder and the other bachelors.

By the way, this was the time Dr. Snyder spent the night at the police station, not the time before mentioned.

Wednesday evening was devoted to an excellent banquet at Unity Hall. It was an occasion to be remembered by all present. Toasts were responded to. Clinics were twenty-five in number and varied in character. The papers were of more than usual interest. Committee on Necrology reported that since our last meeting Drs. H. H. Bradley of Morrison, E. H. Hogan of St. Charles, C. W. Cox of Batavia, A. J. Elmer of Bloomington had



Dr. H. G. Logan.



Dr. C. J. Underwood.

passed from this life. Appropriate resolutions of respect and sympathy were passed. Twenty-three new members were elected. One hundred and four were present at the meeting. Total membership one hundred and sixty-four.

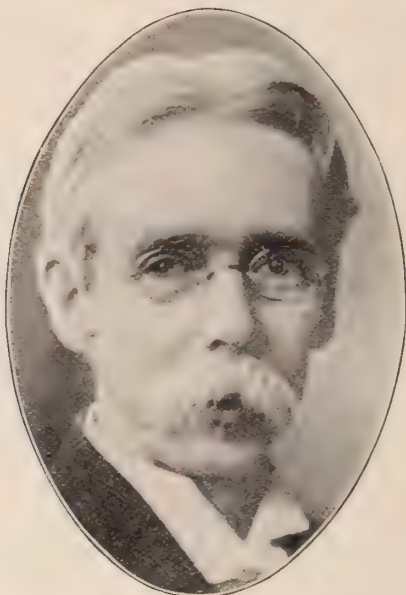
Dr. C. J. Underwood of Elgin elected President for next year, when we should meet at Aurora.

Aurora, October 19, 1910. This was the twenty-third annual meeting of the Northern Illinois Dental Society. Session opened at 10:30 by President C. J. Underwood of Elgin. Dr.

Underwood made his address and Dr. James took the chair during the discussion of the President's paper.

The program committee presented the program as their report, which was adopted. The papers were very interesting. Dr. C. L. Smith from St. Charles read a paper entitled "Mistakes I Have Made." It made such a hit that he was compelled to read it over again the first thing after dinner.

Dr. J. V. Konzett from Dubuque read a scholarly paper, "Gold Fillings and Inlays," but he left off the inlays and dealt



Dr. Edmund Noyes.

thoroughly with gold fillings. Dr. Cormany delivered his sunny, cheerful paper entitled "Isn't It Pathetic?" Dr. B. H. Bigelow had a paper entitled "Business Phase of Dentistry." Usually there isn't very much business about dentistry. Dr. C. E. Bentley of Chicago introduced the propaganda of public instruction in regard to the personal care of the mouth and teeth, "Why and How the Public Should Be Educated as to the Dental Needs."

The clinics were interesting and close attention was paid to them. Dr. Edmund Noyes of Chicago had been a regular attendant of this society year after year. The records showed

him to have been present every meeting since February, 1887. The society thought it fitting at this time to make him President for next year, and meet at Rockford.

Rockford, Illinois, October 18, 1911. Meeting opened at 10 o'clock by President Noyes. Roll call showed about forty present. Dr. Noyes then read his address, which was very instructive and very grandfatherly in its advice. The address was discussed freely.

Arthur Black prefixed his paper with a brief and most interesting lantern slide description of a trip taken by him and his father to Alaska during the summer months. The picture of our beloved Dr. G. V. Black on a road in British Columbia brought forth loud applause.

The papers of this session were unusually good and instructive. The evening session was open to the public and an appreciative audience was in attendance.

Dr. W. A. Evans of Chicago, who was to give the lecture, was late on account of the delay of the train. The subject of his lecture was "Teeth and Health," and covered a broad field and aroused the interest of our members who had not been interested in the public examination of school children's teeth. This was discussed by Drs. C. N. Johnson and C. E. Bentley of Chicago. Meeting adjourned at 11:30 p. m.

Thursday morning was given to clinics. While the clinics were instructive and interesting, they were not much better than what we usually have at our meetings.

The next meeting being the twenty-fifth anniversary, it was unanimously voted to make it a silver jubilee and a banquet given at the expense of the members. The President and the Chairmen of the different committees to be charter members of the society. The election resulted in M. R. Harned, Rockford, President. To meet in Rockford, 1912.

LIST OF CHARTER MEMBERS.

1. James W. Cormany, Mt. Carroll.
2. M. L. Hanaford, Rockford.
3. W. H. Taggart, Freeport.
4. E. H. Allen, Freeport.
5. A. E. Kennedy, Morrison (deceased).

6. A. M. Stone, Elgin.
7. Thos. G. Wonderly, Galena.
8. A. W. Wimer, Rochelle.
9. O. H. Smith, Sycamore.
10. G. W. Dennis, LaSalle.
11. T. W. Beckwith, Sterling (deceased).
12. A. B. Elmer, Rochelle.
13. M. R. Harned, Rockford.
14. F. C. Gill, Rockford (deceased).
15. G. B. Dillon, Sterling.
16. C. B. Helm, Rockford.
17. C. A. Kitchen, Rockford (deceased).
18. John Eaton, Savanna.
19. W. C. Bunker, Oregon.
20. J. Frank Marrimer, Ottawa (deceased).
21. Garret Newkirk, Chicago (now in Pasadena, Cal.).
22. George E. Demming, Amboy.

SPECIALISTS IN DENTISTRY.*

DR. JAMES F. AUSTIN, ST. LOUIS, MO.

The success of dentistry, like that of medicine, has grown to such an extent in the last twenty-five years that today it is impossible for one man in general practice to cover the whole field. Therefore, like the medical profession, we have for the good of the public at large specialized in many branches so as to give the human race better service and obtain better results. "Jack of all trades and good at none." This is a very old saying, but I know it is a very true one.

How much better it is to be able to do one thing and be a master of it than to be able to do a lot of things in an unsatisfactory way, with nothing perfect.

If you will stop to think of some of your friends who are in general practice you can readily see where they are very proficient in some things, and in doing other things they are not so good. I believe the time is not far distant when dentistry

*Read before the St. Louis Dental Society, Tuesday, June 3, 1913.

will be specialized more than it is today. There is no one who helps the general practitioner more than does the specialist.

Dentistry, while it is rightly classed as a profession, is in most of its branches mechanical, and in order for a man to make a successful dentist he must have a mechanical mind. And I must say, although he is the possessor of such a mind, it is asking a great deal of one man that he be proficient in all work which is done by a general practitioner of dentistry. I have never heard of a man who was able to build a house by himself. It takes stone-masons, brick-layers, carpenters, lathers, plasterers, paper-hangers, and I don't know how many more to complete the building. These are classed as trades, and I do not believe any one man could ever become proficient in all of them in a natural lifetime.

A busy man has no time to practice orthodontia; he can make more money for himself by doing other things, and I'm sure he will be doing the patient a much better service by sending him or her to a man who has made a study of that special branch.

I can say as much for oral surgery. Most of us know very little about surgery, and when a patient who is in need of such work presents himself to us we should immediately refer him to an oral surgeon.

The exodontia specialist is, I believe, second to none when we consider what a great help he is to the man who is doing general work. Invariably he takes all of the hard cases from us, which relieves us from a hard and much dreaded operation, and saves for us an immense amount of nerve energy. And you all know how necessary it is for a dentist to reserve this. As I have said before, I believe the time is not far off when we will specialize in different branches.

I think men might work together, each one taking a different branch of work, for instance, let five men office together, one man taking for his work the fillings, another the bridge-work, another plate work, another porcelain, and the other oral surgery.

Take the cleaning of teeth; how many men doing general practice take time to do this properly? I venture to say there are few. Why? Simply because they do not know how to do this work as it should be done. In the second place, if they

could properly do this work, they would not have the courage to charge what they ought to for rendering such a service.

Gentlemen, think of some of the bridge work you see. Think of the inconvenience, and how uncomfortable it must be for a poor being who has to wear such blunders, simply because the man who made it is trying to do more than he knows how.

Let us have men who do nothing but this work so they will have time to give to every case, and do at all times that which is best for the patient, and then, as one of our celebrated teachers has said, let the patient pay what it is worth. The unsanitary condition of some mouths is astounding, caused by placing crowns and bridges there that can not in any way be cleansed.

Some months ago Dr. Price of Cleveland delivered an address before this society, and he instilled into my mind the horror of placing such work in the mouth. I have not a doubt that lives have been lost from this cause. And I know some horrible conditions have been started whereby people have lost all of their teeth and been compelled to wear plates the rest of their lives.

Porcelain work. We will all agree, I think, that the man who would specialize on porcelain and make a thorough study of it would be far more capable of doing it than we who just dabble in it once in a while.

Gentlemen, I wish it was possible to start just such a movement as I have tried to outline, but of course I realized that it will take a long time to get all of the dentists to think this way. But the sooner it comes the better off we will be.

Only a few years ago you would have thought a man crazy if he had told you he was going to do nothing but orthodontia, but today there are many men devoting their entire time to it. We never know until we have tried. It has been proven to my satisfaction that men who have specialized are much better off than we who are doing general practice.

DISCUSSION OF DR. AUSTIN'S PAPER BY DR. M. C. MARSHALL.

The basic principles enunciated in the paper of the evening meet my approval and the general trend of dividing any complex professional labor into specialties begets a degree of efficiency

in each, otherwise non-obtainable. I believe that dentistry has advanced as an ameliorating agency by virtue of this fact. The oral surgeon, the orthodontists, the exodontists and mechanical specialists have aided me in rendering a more satisfactory and efficient service, and because of their contracted spheres they, as a rule, get more money for their work; I would not ask them to get less, but feel that the general practitioner is not getting what is due him for his services to the public. And if we as dentists ever do increase our incomes for professional service, it will be because we improvise means to that end, a work devolving upon us, as we will surely get no assistance from the public at large. This paper of Dr. Austin's has suggested to me that some plan of having specialists grouped together might be worked out whereby better returns may eventually be obtained.

The wonderful success of the great manufacturing and commercial world of recent years has been the result of combinations which reduced the cost and increased the output, by having one pair of hands do one special thing, thereby getting the one thing done quickly and profitably.

The National Hygiene movement may and is likely to increase the output; then the question for us to solve is to reduce the cost, which may be accomplished by having each department specialized, and so grouped that each will have increased capacity, possibly thereby enabling each to secure a more adequate compensation for his services, which I take to be the central thought in the paper. Progress and change are ever at work and opportunities for our advancement must be watched, and all possible avenues for betterment investigated.

The commercial side of professional life has always existed, and must necessarily always remain a very important adjunct; we must pay the "Butcher, baker and candlestick-maker" just as other people do, and the man who goes on neglecting the business part of his practice soon finds himself without credit.

I reiterate, we should get a more just compensation for our labor, and I am not sure but the grouping of specialists may be so arranged as to offer such opportunity. On the other hand, it can be very successfully asserted that contracting our field of labor narrows our vision and deprives us of that broad view of correlating facts, thought to be so essential, especially in

dealing with the manifold pathological perplexities so often presented. It may be that the time is not so far distant as some of us may think when this question of a broad, well-rounded-out practice, versus the contracted field of the specialist must be settled by the demands of civilization is making for progress in every known field of human endeavor. General medicine is only a specialty in the labor of mankind; yet if you have a hazardous surgical operation to be performed, you would much prefer that a skilled surgeon would handle the scalpel; on the other hand, had you a malignant fever, the surgeon would not be your choice. The profession of law has its many special departments; men who have become famous therein have specialized—they have delved deep into law regarding one special thing.

Therefore, it is my opinion that after proper academical preparation, followed by the fullest professional training, one can reach a higher degree of efficiency by specializing. I commend the sound sense of this paper for your serious consideration.

ANALGESIA IN DENTISTRY.*

BY WILLIAM HARPER DE FORD, D. D. S., M. D., DES MOINES, IOWA.

Your program committee has honored me by extending an invitation to read a twenty-minute paper on "Analgesia in Dentistry." "Analgesia implies insensibility to pain; also absence of pain; a form of partial anesthesia."¹ It is a condition of insensibility to pain without the loss of consciousness. The sensation of touch may persist without the sensation of pain. Recently in our clinic a student was operating for a patient with a tooth so sensitive that he simply refused to have the operation completed. Face bathed in perspiration, tears streaming from his eyes, I administered five or six inhalations of somnoform. The student resumed the preparation of the cavity. Patient said, "Wait a moment, I want to tell you something. I can feel the pain just as before, but I have no tendency or desire to dodge or pull away from the instrument." Of course he felt no

*Read before the Chicago Dental Society, April, 1913.

1. Lippincott's New Medical Dictionary.

pain or he would have pulled away just the same as before inhaling the analgesic. Another patient expressed himself in this manner, "I feel the pain just as I did before inhaling that stuff, but I don't care a d—n." I have just said that the sensation of touch may persist without the sensation of pain. These men could feel the pressure of the bur, could hear the sound incident to the cutting, but there was no pain.

One in a state of analgesia hears what is said, knows what is being done, makes reply to questions. Analgesia is the first degree or stage of anesthesia, and differs visibly, mostly in that, in surgical anesthesia the patient is in a condition of profound unconsciousness, while in analgesia the patient knows what is being done, answers questions, follows directions, such as "Open your mouth a little wider," "Turn your head towards me," and makes oral response to such questions as "Do you mind what I am doing," etc.

In *Oral Hygiene*, for January, 1913, I defined a term which I designated Surgical Analgesia.

"Surgical Analgesia implies a state or condition of the patient in which, without complete loss of consciousness, certain surgical procedures may be accomplished without inducing pain; or the pain incident to the operation as ordinarily performed is held in abeyance to such an extent as to elicit no objection on the part of the patient."²

This condition which I denominate surgical analgesia varies in different individuals; with some it is present at the very beginning of the analgesic stage, after two or three inhalations; with others it is absent till we approach or reach the beginning of the light anesthesia stage. In the stage even of light anesthesia we have complete loss of consciousness. If the patient is carried this far, we go beyond the analgesia stage and the results are not as satisfactory as when operating a little sooner. It is very desirable that these operations be performed in the stage of analgesia rather than that of light anesthesia. In the stage of light anesthesia respiration is considerably deeper and quicker than normal, and the heart's action excited, hence patients are more apt to become excited, and having passed into un-

2. Surgical Analgesia, DeFord, *Oral Hygiene*, January, 1913.

consciousness, cannot assist the operator to the extent that a patient can who responds to such demands as "Turn your head towards me," "Elevate your chin," etc. Either operate in the stage of surgical analgesia or push on to the stage of surgical anesthesia.

This analgesia stage is ushered in by a sense of warmth or mild stimulation, because of the fact that there is a slight rise of blood pressure and slightly increased respiration, conditions conducive to safety. Most patients quickly recognize a feeling of numbness in the lower extremities, extending to the hands, cheeks, lips, gums, and upon snapping the teeth together, a sense of deadness, and they frequently volunteer the expression, "I know you can now operate without my feeling pain, and even extract teeth." In nearly all cases patients will indicate the stage at which they believe painless operating can be done, and after once having experienced this sensation will, at future sittings accurately estimate the moment at which the operation can begin. Very seldom are they mistaken as to when it is safe to begin operating, and the fact that they feel that painless cavity preparation can be made at that particular time, exerts a helpful psychic influence, very much to be desired by the operator. I sometimes think the patient, feeling himself passing away, not wishing to lose consciousness, takes a chance of being in the proper condition, and surprisingly finds that it is so.

This sense of stimulation is to most patients very agreeable. A month ago I happened to step into the office of the dean of one of our Southern dental colleges. He introduced me to a patient to whom had been administered somnoform for analgesia induction, the operation in question being that of the removal of serulal deposits in a case of advanced pyorrhea. I inquired of this patient as to an expression on her part of the difference in feeling at first without the aid of an anesthetic and then under analgesia, and she replied, "I could have but two teeth operated on at a sitting without the anesthetic, and it was extremely painful, but in the analgesic state six teeth, all upper molars, were operated on at the sitting without a particle of pain and the sensation experienced was positively pleasant."

There is this about analgesia operations. A patient once

submitting to this method will never again allow you to operate for him in painful conditions without it.

We aim to have each of our students do a certain number of operations under analgesia to familiarize themselves with the technic, and these patients returning, finding that they must submit to other work without the aid of the analgesic have refused to have their work completed, saying they would go to a private office where this method could be used.

The new beginner need not become discouraged if he is not entirely successful at first, bearing in mind that even if he does not succeed in inducing an ideal analgesia, a partial failure is better than no application at all.

All general anesthetic agents have their analgesic stage. Analgesia can be induced by inhalation of nitrous oxid and oxygen, nitrous oxid and air, somnoform, ether, chloroform, ethyl chlorid, ethyl bromid, and other agents not so generally known, but for dental purposes I believe that nitrous oxid and somnoform are to be preferred above all other general anesthetics for analgesia induction.

Safety is the first requisite in selecting an analgesic agent, and statistics show that in the matter of safety nitrous oxid and somnoform are far less dangerous than other general anesthetics. The death rate for these anesthetics is only one in several hundred thousand administrations. With such a record for nitrous oxid and somnoform for cases of surgical anesthesia, how much safer these agents must be when used only in the analgesic stage. And bear in mind, please, that these figures include nitrous oxid and somnoform administrations from the very beginning when the appliances were most crude and unscientific, and those using them usually had no previous knowledge of anesthetics, relying for the most part upon the printed instructions that accompanied the appliance.

Other things being equal, the anesthetic agent pleasant to inhale, most free from disagreeable effects during and after administration is the one to be preferred. With nitrous oxid and somnoform, by means of modern appliances these gases can be administered so gently as to be almost undetected. Should these, however, prove objectionable to the fastidious, or the elite, or the patient imagine them so, a few drops of essence of

orange will completely disguise the aroma of these agents, and even the disagreeable, penetrating, nauseating ether odor can be completely covered up by a little essence of orange.

Easy and rapid production of effect, when this can be done safely and easy and rapid recovery are greatly to be desired. With nitrous oxid and somnoform, deep anesthesia can be induced in from thirty to forty-five seconds, and usually in a minute or two after returning to consciousness all effects of the anesthetic are gone.

Simplicity of administration is a most important feature. Nitrous oxid is a good anesthetic, and it will accomplish all that is claimed for it and failures result from its use simply because men have not the patience, skill and perseverance to stay by it till they learn how. Analgesia cannot be induced by pure nitrous oxid for surgical purposes without the admixture of air or oxygen, and when we add oxygen the process becomes even more complicated. We now have to deal with two gases instead of one, and the proportions must be preserved and maintained, and the pressure behind them must be constant, but it is time well spent to learn this accomplishment. Somnoform is the easiest of all anesthetics to administer. Men who make most dismal nitrous oxid failures, experience little or no difficulty in inducing somnoform anesthesia or analgesia. Somnoform appliances are very much less complicated than nitrous oxid appliances, much easier to manipulate, weigh less than a pound, no cylinders, pressure gauges, or warming devices are necessary, and the somnoform comes in convenient glass capsules, and can be sent by means of parcel post. Somnoform anesthesia and analgesia can be induced without the admixture of oxygen; air dilution is all that is necessary, and cases are on record of sixty-minute somnoform analgesia with one-eighth somnoform and seven-eighths air, the patient at no time losing consciousness, no distressing or alarming symptoms and entire absence of pain.

Although I induce analgesia just as patients happen to come and have witnessed nausea only a few times with nitrous oxid and not at all with somnoform, in private practice, I believe it best to make appointments two or three hours after the patient has eaten a meal, or have them abstain from food. In the case of women the corset and all bands should be loosened, the neck

muscles should be free from pressure with all patients, and the bladder should be emptied before taking the chair.

It is prohibitive to consider analgesic technic in a twenty-minute paper, and I will not attempt it.

We operate on vital tissue, "perform laparotomies on the teeth," so to speak, the patient suffers, cringes, agonizes, almost to the point of collapse and the anesthetic usually employed is that of witty speech or an amusing story.

If pain meant no more than the hurt at the time, and we could properly cut down to healthy dentin, and could obtain correct cavity preparation, and could make the patient submit to all necessary cutting no matter how severe, it might be excusable to continue present methods, but pain intense in its character and even when slight if long continued is detrimental to our well being, shatters the nerves, induces neurasthenia, breaks down the will power and enervates our physical being. "Exhaustion of the vaso-motor centers rather than structural lesions is what produces shock, and I want to emphasize the fact that it is a dangerous procedure to submit even the physically strong, more so the frail, to intense pain beyond certain limits."³ It seems almost beyond comprehension, when the means is at hand to prevent pain, and the public are clamoring for it, demanding it and will pay any price to obtain it, we go on in the same old way obtaining inferior results, knowing at the time that the operation falls short of what it should be, and will fail in a few months because we cannot remove the carious tissue thoroughly or cannot prepare a cavity sufficiently well for the retention of the filling or inlay, and fail utterly in shaping a tooth for a crown because it becomes too sensitive and are defeated in removing calcarious deposits, yet 95 per cent of dental surgeons continue this line of practice.

I do not believe there is a man within the hearing of my voice, except those that operate under analgesia, that does not every day fall short of doing what he knows would be better for his patients. We adjust the rubber dam, map out in our minds the cavity preparation we believe best for a particular operation, break down enamel walls with chisels, remove soft

3. Lectures on General Anesthetics in Dentistry. Second Edition, page 22.

decay with excavators, resort to the bur for the removal of less carious dentin and proper shaping of the tooth for retention of filling or inlay, but the tooth becomes extremely sensitive, we cut in a less sensitive area, finally it is alike sensitive in all directions, yet some carious dentin remains and the cavity is not the shape that will retain the filling or inlay. Patient is becoming more nervous all the time. the amount of pain well borne in the earlier part of the operation is almost unbearable now. Contortions of the face and restlessness, pulling away from the bur, together with verbal protests such as, "I am doing my best, Doctor, but I just cannot stand this any longer." We begin to say to ourselves, now if I can get enough retention to retain the filling, I will let that discoloration go, it will probably make no difference. In this way we compromise cavity preparation, and we fail to remove all carious dentin. Carious dentin bears the same relation to dentistry as carcinoma does to surgery, and the dental surgeon is as culpable who overlooks this condition as the general surgeon who does not do a radical operation in cancerous conditions. We can no more do our work as thoroughly as it should be done, than the general surgeon can do his work properly without employing every means available.

This movement is spreading rapidly. Prominent dental surgeons all over the country are becoming interested in analgesia. As a dental educator there is no more forceful or influential man in the dental profession than Dr. H. E. Friesell, dean of the University of Pittsburgh, College of Dentistry. This past year he was president of the Institute of Dental Pedagogics. In a letter received from him just recently he says, "When my address as presented to the Institute of Dental Pedagogics comes out you will see that I have laid stress therein upon the fact that dental schools must devise and teach safe and certain methods of anesthesia and analgesia, in order to eliminate pain absolutely from dental operations. This is exactly what I feel in the matter and no one can do a more important service to humanity and dentists than to bring about this condition. I do not mean to teach a few students who are especially interested to accomplish this, but to teach every student, so that within a few years any pain whatever in connection with a dental operation will be little short of mal-practice. This is one of the problems dentists must

solve." I have never dared go so far; I have never written or spoken as plainly as Dr. Friesell, but he has expressed exactly what I have believed and hoped for these many years.

THE USE OF COMPRESSED AIR FOR DESENSITIZING SENSITIVE DENTIN.*

BY W. T. REEVES, D. D. S., CHICAGO.

In giving to you tonight this short paper on the use of compressed air for obtunding sensitive dentin, I believe I am bringing you a very simple and effective means to that end. In presenting this subject we have two conditions to contend with—physical and mental. We will first take up the physical. The production of cold artificially is effected by various means. When a body, in the broad sense, is rarefied, passing from the solid to the liquid or to the gaseous, or from the liquid to the gaseous state, or, being a gas, expands against pressure, energy is expended. This energy is practically supplied as heat. If none is directly applied, and the rarefaction is produced without heat, then the body expands its own heat energy in the mechanical or physical work of rarefaction and cold is produced. The volatilization of liquids is one of the best known means of producing cold and in dentistry we use ether, and ethyl chlorid to that end, but the intense cold produced when applied to a tooth is often more painful than the drilling and excavating would have been. The phenomenon of cold produced by rarefaction of a gas is well illustrated by a cylinder of nitrous oxid gas. Here we have a hundred gallons of gas compressed into a receptacle that would hold about a quart of liquid. The volume of compression or pounds pressure I don't know, but if liberated in the right quantity, rarefaction or its return to original volume will produce cold intense enough to form frost and ice from the moisture in the atmosphere, sufficient to close the orifice. Air can be compressed in volume until it becomes a

*Read before the Chicago Dental Society, April, 1913.

liquid. The compression of air or any other gas produces friction and friction means heat. But when at rest the tank and contents will soon radiate its heat until it is practically the same temperature as the surrounding atmosphere. The greater the compression the greater the cold produced in rarefaction. According to volume of compression, or pounds pressure, so must be the size of the orifice of escapement that energy produced by rarefaction may result in cold. In speaking of compression I shall use the term pounds pressure as conveying a more comprehensive understanding than the term atmosphere. If we had a tank containing air at 20 pounds pressure and allowed it to escape through an orifice half inch in diameter very little energy would be engendered by its rarefaction and consequently very little cold produced, but if on the other hand the orifice was the size of a needle point, the energy produced by rarefaction would produce quite a satisfactory degree of coldness.

From the foregoing you will see that the distance from which you deliver the air upon the object will have everything to do with the degree of cold produced. You can be so far away from the object that rarefaction has reached the stage of full expansion, or so close that the jet of air is shunted to one side before rarefaction starts, and in either case no results are obtained. Compressed air at 20 lbs. pressure will produce fair results of obtunding sensitive dentin; 30 lbs. pressure will do better; but 40 lbs. pressure is desirable—50 lbs. or more will give still better results. I have taken 40 lbs. pressure as desirable, because that is the average pounds pressure of the compressed air furnished in the different office buildings in the city and have worked out my deductions on the basis of 40 lbs. pressure. Compressed air at 40 lbs. pressure delivered in a jet from an orifice the size of a No. $\frac{1}{2}$ round bur into a cavity such as we deal with in cavities of decay in a tooth at a distance of from a quarter to a half inch, will reduce the object to a temperature of about 52 degrees. Body temperature is 98 degrees Fahrenheit—freezing point is 32; a difference of 66 degrees. Reducing the tooth to 52 degrees, we have reduced the temperature of the tooth 46 degrees, or a little over two-thirds from body heat to freezing point. As a matter of fact if the temperature of the body is reduced to about 50 degrees the body is

so numb from cold as to have very little feeling or sensation. That is what we do when we apply compressed air at 40 lbs. pressure to a cavity of decay in a tooth. The tooth is lowered to a temperature of about 52 degrees and the pulp is so benumbed as to respond not at all, or very feebly, to the pain sensation produced in the use of bur, stone or excavator in cavity preparation. Secondly, and of no less importance, we absolutely prevent all heat from friction in the use of bur, stone or excavator. Heat from friction is the main cause of pain sensation to the brain in cavity preparation.

Unfortunately we have another condition to contend with—the mental or psychological effect of work upon the teeth. The brain receives impressions through the five senses: taste, smell, sight, hearing and touch; so far we have only dealt with touch. Sight and hearing play an important part in the conveyance of pain sensation to the brain; hearing the greater of the two. The brain, through repeated telegraphic communications from the five senses has become so used to receiving certain sensations under certain conditions, that such sensations are automatically recorded; that is, the brain receives and records automatically a sensation quicker than the brain can think and reason that such a condition has transpired.

Unfortunately by the great majority of people the dental chair is looked upon as a chair of torture, and to such pain sensations are automatically recorded through any of the five senses; namely, sight, hearing and touch. The only exception is a child who has not experienced any previous dental operations or has not experienced pain from toothache, or to whom the parent has not held up the dentist as a boggy man. Such a patient I have no trouble to work for—never deceiving them, letting them know they feel this or that, when you know feeling will result from the part of the cavity you are working in. They not being scared, will receive no greater pain sensation than from the same amount of feeling in any other part of the body.

Sight performs a considerable part in the automatic registration of pain sensations in dental operations. How many of you have seen patients cringe and experience pain at the approach of an object of dental operation toward the mouth. That is pain sensation automatically registered before reason can act

and convince the patient that such condition has not existed. The pain is just as real even if the registration has been false instead of true. Hearing plays a greater part in false registration than sight, and unfortunately for us, we can hear through the teeth about as well as through the ears. It is the noise from the jump of the bur in the cavity or the click of the bur upon the enamel that automatically records a false impression of pain. You have all had the experience of working upon a devitalized tooth and the patient experiencing all the pain sensation that would come from a vital tooth. That is the false registration of pain sensation through the sense of hearing. Another illustration of false registration of sensation; at some time or other I expect you have all had the experience of approaching a radiator that you expected was hot, and upon touching it a burning or heat sensation has been conveyed by the extreme cold before reason could act and convince you to the contrary.

Now for this condition you have got to produce a psychological effect—for the majority of patients it will not answer to simply obtund the sensation of touch. You have got to produce a psychological effect. That is, you have got to prepare the mind to receive the benefit that comes from the obtunding of the sensation of touch. The application of compressed air through the ordinary air nozzle used as a chip blower would to the majority of patients convey only pain sensation, for that is what they have usually experienced from the chip blower, and all your logic could not convince them to the contrary.

For the psychological effect upon the patient I employ an ordinary spray bottle in which is placed a vial containing chloretone. I tell them that chloretone is a synthetic drug produced to take the place of cocain, but that its effect upon dentin was not profound enough—until compressed air was employed to force it into the dentin. You are telling them no untruth, but you have prepared their mind to receive the benefit that comes from the obtunding of the sensation of touch.

To summon up results, I believe I am very conservative when I state that fully 75 per cent of all cavities for all conditions of patients are prepared without any pain sensation, and of the other 25 per cent of cases I have from 75 to 90 odd per

cent of success. This method is so simple as to be almost unbelievable, but if you will make a rational application of this method I believe any and all can obtain these results. Bear in mind all the time that you are working upon a vital tooth, and work accordingly. You could force the cutting so hard that nothing short of complete anesthesia could prevent pain sensation.

The *modus operandi*—no previous preparation of the patient is necessary. You operate without putting on the rubber dam. The saliva syphon in place and cotton rolls where needed, and changed when necessary. Your assistant now starts the application of the air, beginning with a jet so minute that it is not felt by the tooth. If it should be felt, place a pledget of cotton into the cavity—and direct the jet of air upon that. In a few seconds the tooth will become used to the air and the cotton removed. Gradually increase the air until you are giving the full force of the 40 lbs. pressure, taking about a minute and a half. In the meantime you will lay out on the table what instruments, burs and stones you expect to use in preparing the cavity. Your assistant keeps the air playing into the cavity all the time without any let up—if the air was stopped sensitiveness would return to the tooth in about a half minute. Now begin on a part of the cavity that you know will not hurt, and in that way let the fact that you are cutting the tooth and that it is not hurting sink into the mind of the patient. Soon you will go into other parts of the cavity and have it all completed before you know it, and the patient will not have suffered any pain—and lastly, the whole operation is so simple and quickly performed that you would be all through while other methods were getting their paraphernalia adjusted.

OBTUNDING DENTIN BY MEANS OF LOCAL APPLICATIONS.*

BY ELMORE W. ELLIOT, PH. G., D. D. S., CHICAGO.

It affords me great pleasure to see that the Treatment of Sensitive Dentin is considered of enough importance that the Chicago Dental Society has given an entire evening to its discussion.

Judging from certain journal articles recently published and some of the literature of manufacturers of gas apparatuses, we would be led to believe that the use of general analgesic measures was new. It is a matter of common knowledge, with those who have taken the pains to so inform themselves, that there are different stages produced in the administration of general anesthetics, one of which is that of general analgesia. As is well known by the older men in the profession, Dr. A. C. Hewitt, and if I am correctly informed, the first essayist of the evening, Dr. DeFord, and others, used chloroform successfully for this purpose; others used nitrous oxid.

The dentist who is going to be the most successful in eliminating pain in his dental operations must of necessity be an eclectic. By this I mean he must use all of these various methods, depending on the case at hand. With some patients nitrous oxid and oxygen properly administered produce ideal results. In certain cavities, such as a small gingival, either warm or cold air will aid materially. In fact, in many such cases all pain is eliminated. I have found, however, that with certain patients more satisfactory results to all concerned are obtained by the topical application of remedies. In my own practice I find that some patients abhor the thought of taking gas, and cold air in large, deep-seated cavities in my hands has been disappointing to say the least. In these cases phenol compound gives great relief by applying the remedy directly to the cavity as often as it seems to be necessary.

It is my invariable custom to warm my remedies before applying to the cavity. This is done by passing the same through

*Read before the Chicago Dental Society, April, 1913.

the flame of a bunsen burner. This will be greatly appreciated by the patient.

We have able authority which claims that normal dentin is without sensation. Whether this be correct or not, I am unable to say; but nevertheless I do know that the dentist has to do with conditions where the dentinal fibrillae have been subjected to continued irritation, with the result that the dentin is often hypersensitive.

There are few operations which the dental surgeon is called upon to perform wherein the patient will appreciate our efforts more than by applying drugs and remedies for the alleviation of pain. We should, of course, possess a thorough knowledge of the anatomic and histologic structure of the tooth, also of the pathology of the fibrillae and of the pulp tissue as well; the changes which these structures may undergo if unduly irritated by the application of the remedy used. We should also have a thorough knowledge of the pharmacologic action and the therapeutic application of the drugs and remedies selected; and should always know definitely, before using, what action to expect.

We, as a profession, are greatly indebted to Dr. J. P. Buckley for the many valuable formulas which he has so freely given to us. One of these which has given me great satisfaction is the following: Zinc chlorid 20 grains; 4 drams each of alcohol and chloroform. This is not a panacea for all cases; but in large cavities, in molars and bicuspid, which approach the pulp, its use is very gratifying. In this formula the irritating property of the zinc chlorid is controlled by the chloroform, the alcohol being necessary to effect a solution.

The importance of preserving the first permanent molar is recognized by all. This was again emphasized by Dr. Noyes and others at our last meeting. Frequently cases present in the mouths of young children where the first permanent molar is badly decayed, with the pulp fortunately still alive. How to treat and protect this pulp is often a very difficult problem. If the cavity is such that a remedy can be sealed in, I frequently use the official oleate of cocain. This is a rather new preparation, having been introduced for the first time in the last edition of the United States Pharmacopeia. The cavity should be kept

dry, preferably by the use of the rubber dam, when all dentin which you wish to obtund should be covered with the remedy. Dry cotton is then placed over it and the cavity sealed with a temporary cement to prevent pressure. In case the oleate of cocain cannot be obtained, I suggest the following formula which will act equally as well: 2 grains each of the alkaloidal cocain and thymol, added to $\frac{1}{2}$ dram sterilized liquid petroleum. This formula has the added advantage of being a disinfectant as well as an analgesic.

One advantage of obtunding sensitive dentin by the topical application of remedies is that most drugs used for this purpose, besides possessing the property of local analgesia, for which purpose they are here used, also possess the property of disinfection. We, therefore, sterilize the dentin at the same time we obtund the sensitivity of the dentinal fibrillae. We should ever bear in mind in all methods of obtunding hypersensitive dentin the possibility of injuring the pulpal organ. There is no question in my mind but that many pulps have subsequently given trouble, because of the lack of proper sterilization of the dentin before the insertion of the cement base and the final filling. The products of albuminous decomposition, if not removed, act as irritants to the pulp, inducing pathologic disturbances frequently of such a character as to demand the removal of the organ.

To detail the use of all the local remedies that have been suggested for the purpose of desensitizing the dentin of a tooth would be both tiresome and useless.

In my discussion here I have endeavored to call your attention to a few remedies which have found their worth in my practice; and in closing, I desire to say here that while I believe every dentist should endeavor to perform operations with as little pain as possible, yet I question seriously whether it is best with certain patients to eliminate all pain in every operation. Pain is our indicator, pain should be our guide. We should ever bear in mind in the use of drugs and remedies for the purpose of obtunding sensitive dentin that suggestion is as valuable here as it is in connection with other measures for accomplishing this end, and I repeat that there are few operations where the patient will appreciate our efforts more than in the careful, thoughtful and judicious use of any method for making our dental operations less painful.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-NINTH ANNUAL MEETING HELD AT PEORIA, MAY 13-16, 1913.

DISCUSSION ON THE PAPER OF DR. COOLIDGE.

DR. F. W. GETTHRO, Chicago:

Mr. President: I want, first, to compliment the essayist on the excellent paper he has presented. He has given us a lot of details that are valuable and should be followed minutely.

Dr. Coolidge said cavities should be carried to the angles. He did not mean necessarily that the cavity should be carried to the angles of the tooth. We know that the angles are immune areas, but we sometimes reach immune areas before we reach the angles of the teeth; therefore it depends upon the shape of the tooth, the prominence of the point of contact, etc., as to just where it is necessary to go in order to reach this area. In others words, we want to reach an area that is kept clean by the excursion of food, by the use of the tooth brush, by all methods that clean the surfaces of the teeth, and when we have arrived at that point we have arrived at the point where we want to lay our cavity margin. I fear many of us are basing our opinions of inlays upon too short an experience. We know it takes years of accurate records to make correct deductions. I think many of us are placing inlays in cavities that are practically immune to decay. The trouble people are having at this period of life is a recurrence due to faulty fillings. In a great many instances, we are now practicing "extension for prevention" because it is more convenient to do it in preparing cavities for inlays and some of us, I am sure, are comparing our results with the cavities we prepared some years ago for gold foil fillings, leaving the cavities as small as the conditions would permit. We have gone to the other extreme. We are making cavities as large as necessary, so that we must place the wax and remove it easily.

I would like to call attention again to the point that we must have a lot of accurate records. I doubt if many of us are keeping records from year to year, so that we can go back to them and make accurate comparisons, so that we can draw deductions as to

whether these fillings are permanent or not. I am not decrying the gold inlay. There are places and cavities in which no other material will do as well as a gold inlay, but there are several places where a gold filling is far better than a gold inlay can ever be.

A great many believe that an inlay presents a much shorter method of filling a tooth. As a matter of fact, I do not think that is true, but whether it is true or not, that should never be the governing principle as to whether we should use an inlay or gold foil filling or some other filling. It should be the best filling for that individual case, and there is no best filling except for individual cases. You cannot compare a gold foil filling or a gold inlay with amalgam unless you have a definite cavity and definite conditions to deal with. There are lots of mouths in which we cannot place gold filling due to periodontal trouble. We cannot subject the patient to malleting. Therefore, a gold inlay will go into these places and will make an excellent filling.

The essayist spoke of the dangers that some decay in the surface beyond the gingival margin of the cavity may escape our attention. That is true in the preparation of the cavity for any sort of filling material if the rubber dam is not used, and that should be sufficient to compel us to use the rubber dam under all circumstances. In many cases if we prepare cavities without the rubber dam and then place the rubber dam, we will find there are many areas that we did not suspect that were covered up by the moisture, that will be in evidence when the tooth is dry. This is not only true of the outer surface of the tooth, but it is likewise true of the enamel junction. We know that after decay extends through the enamel, it grows rapidly at the dento-enamel junction, and the only way to get at that scientifically and thoroughly is to have the rubber dam in place to see what you are doing.

The essayist also spoke of the imperfections about casting due to air and also to gases. This is a question of technic, and I think it is easily avoidable. Considering the methods that are given us and the material furnished at present, we have opportunities to make these inlays and fillings without any of these imperfections. The filling should fit perfectly without a particle of grinding on the inner surface.

I have brought with me samples of casts, showing that it is unnecessary to have the slightest imperfection on that part of the gold.

or upon the other part so far as that goes. It is claimed that imperfections are liable to occur, especially at the gingivae, but burnishing will overcome these, and that is one of the great advantages of the gold inlay over any other inlay—for instance, a porcelain inlay, because we can burnish this material and make the margin more perfect. But we can never make a margin there as perfect as a well condensed filling.

Pure gold was spoken of, and it was mentioned that solder should be flowed over the contact point to make it hard enough to wear well. I know of no exception.

I believe it is good practice to flow solder on the occlusal parts. There are many places where the bite is strong and the occlusion correct, and if we use pure gold inlays they will not stand the test of continued mastication.

DR. C. L. SNYDER of Freeport:

There are a few details and some features not mentioned by the Essayist that I will call attention to, hoping they may be of more or less interest and bring out further discussion.

I will not go into the cause and character of decay except to say that the location and extent of the cavity to be filled should govern us as to the method to be employed, and material used. There are places where inlays are out of the question especially in those cases where the cavity extends bucco-lingually. We should be very careful not to crowd a good thing beyond its sphere of usefulness. Personally I do not follow any distinct method or rule in inlay work, neither do I in any line. It is not so much the rule, but the conditions, that should govern us. The point is to succeed, and to accomplish this end, we must be able to see with our mind's eye every step, and the finished product, or ultimate result, when studying conditions. The first inlay I can recall was one that I made out of a Justi tooth. The porcelain was ground to fit or nearly fit a labial cavity in a central incisor. Much to my surprise I learned about four years later that this piece of work was still doing good service. This was in Singapore about twenty years ago, and the results obtained at that time has led me to work along those lines ever since.

The Essayist referred to the proper care and precaution in preparing cavities for inlays. This is of vital importance. The usual custom of not using a rubber dam in connection with this

part of the work is the cause of many failures. The beveling of the cavity walls and the burnishing of the inlay to the same, is to my mind of the greatest importance. With reference to the wax impression—there are times when the cavity extends under the gums, and it is no easy matter to define the gingival margin of the cavity, for this reason, we should take the same precaution that we do for fillings, that is, to see that we have space and that the gums are well out of the way. After the wax has been pressed to place and trimmed, I find that a very fine cuttle fish strip carried to the gingival is a great help in bringing the wax to the cavity walls, it is, however, important that the assistant hold the wax into place during this procedure. This is one of the times when the assistant is almost indispensable, as any movement of the wax would spoil all. To remove the wax I use a sharp instrument, heat the point and press it into the wax, at the same time have the assistant apply cold compressed air—by this method the wax can be removed without any chance of distorting it. Another point that the Essayist did not mention is the thickness and bulk of the inlay, I believe we get the best results by having just enough gold to stand the strain, and that the excess wax should be cut away this can be accomplished by the use of a sharp wheeled bur—keeping the wax hard by applying cold compressed air, the wax may shrink some by cooling, but I prefer to take this chance of chilling rather than to have it draw and pull out of shape. I have obtained superior results by again replacing the wax—seeing that the margins and the bite are perfect.

In regard to cements, this is where we are up against it, as for some reason or other there are cases where cement fails us under well fitted inlays, and I would like to hear from some of our cement experts on this subject.

Many think an inlay is an easy thing to put in—that anybody can make an inlay that if they cement it in it will stay there and do service, possibly so, for three or four years but if we want to do inlay work, we must do it right, and there surely is a right way to do it.

DR. F. A. NEUHOFF, Belleville:

With reference to cavity preparation in gold inlay work, I think many in the profession have been a little lax for the simple

reason that the name of the filling was *Inlay*, as though this name signified its intention of permanency.

Regarding the preparation of cavities in the mouth in moisture, which may cause an oversight of decay along the gingival margins, such a case upon drying will always show the decay and if the cavity has not been dried before the time for setting the inlay, it must necessarily be dried to set it, and the line of decay will then be noticed. The inlay should then be laid aside and a new preparation including the decayed area should be undertaken immediately.

Our technic in cavity preparation most necessarily needs our undivided attention in all fillings.

The arguments that are advanced about shrinkage of the wax and investment, the shrinkage of the gold, are well founded, but the trouble from that source does not amount to much. When I began to make inlays every once in a while I made a good one, and then a bad one, and now I am glad to say the majority of them are good. If they do not come out good, I go back and find fault with my technic. I venture to say the fault does not lie with the contraction of the wax nor with the gold, but with our technic. If these contractions and shrinkages were the cause of our failures every inlay would be greatly at fault.

To take up the matter of investment and the casting, I feel I would not be able to add a single thing to that which Dr. Taggart told us two years ago. We are not in a position to have the advantages Dr. Taggart had regarding the automatic mixer of investment, etc., and I have seen the common ordinary mixing bowl used for mixing investment, and if one mixes the investment in proper proportions jarring it well, revolving the bowl at the same time, he will get rid of the bubbles without the automatic contrivance. I do not get bubbles upon the inner surface of my inlay, and I use the above method of mixing, so I know we must be able to get rid of them in that way.

One thing I find of advantage in investing the wax pattern is to pour a slight amount of alcohol upon it, so the investment will spread over the wax surface evenly and readily, and in this way prevent bubbles.

DR. E. H. ALLEN, Freeport:

Dr. Coolidge has told us all about the fashions for the spring and summer of 1913 in inlays, and there is no doubt but what

the fashions for 1914 will be materially changed from what they are today. (Laughter.) The gold foil filling is still with us, and we are through with the matter of styles and fashions years ago.

It requires just as much judgment and common sense to put in a gold inlay as it does a gold foil filling. It requires just as much skill to put in a gold inlay as it does to insert a foil filling, but he sprang a new idea on me, and that is flowing gold solder over the occlusal surface of a gold inlay. I presume that belongs to the season of 1913. (Laughter.) Let us taken the mesio-occlusal surface of a first molar, for instance. If you will prepare that cavity for an inlay the same as you would for a gold foil filling minus the undercut that retains the filling, you will not need to flow any solder over the occlusal surface. Who ever heard of flowing gold solder over the occlusal surface of a mesio-occlusal gold foil filling. (Applause.) Do you know that many of these gold foil fillings have stood for many, many years without decay taking place? Some of them for 30 years or more. What is the use of getting up here before a society like this and saying that you flow gold solder over the occlusal surface of gold inlays, and pure gold at that.

DR. F. W. GETHRO, Chicago:

Dr. Allen has misunderstood me, and I would like to make myself plain. From what he has said he would have you infer that I flow gold solder over the occlusal surface in order to make it occlude. I cut away that part which does occlude and apply solder to make it harder. I would like to show this to Dr. Allen. I have here a cavity prepared—a mesio-disto occlusal cavity—in a first molar. The gold covers the cusp. In other words, I have cut away the cusps of the tooth so that the gold takes the stress of mastication, and the walls cannot break away. I flow solder on the contact point also, so that it will not wear away.

DR. ALLEN:

There is no fault to be found with the technic of this filling and the way you have made it. But why put your gold solder on there? It does not need it. The way that is laid it will not spread under any ordinary severe use which it gets in the mouth. It will stay right to its place. I have seen many a gold foil filling made like that. I have made them myself and they stay and do their work. What I object to is flowing gold solder on it. What is the use of it?

DR. J. N. CROUSE, Chicago:

In the first place, I agree with Dr. Allen that there is no necessity at all for flowing solder on the grinding surface of a gold filling. I have got gold fillings that were placed in teeth 40 years ago, they are keeping their shape well and are doing good service. However, I think the casting process has revolutionized the practice of dentistry. Some of the objectionable phases have been spoken of here, particularly the thin wall, which is just the place for an inlay because you have got to use cement with which you can back up the thin wall and save it. In such places you can put inlays, and particularly where the walls are thin.

In regard to the cement question, we used to put it up in boxes with a measure and a dropper, giving the directions of the amount of the liquid that should go with the big dropper or small one, and the object of that is that you should mix the cement all at once. You get the fluid and powder under a spatula together just as quick as you can, and you get it mixed as quick as you can, and when you make it smooth, you get it to place as soon as you can and quit.

I have an expert assistant who does that; I would not know how to mix cement properly and set an inlay and do it right. While she is mixing the cement I dry the cavity and prepare to set the inlay.

Great stress has been laid on the thoroughness with which this work should be done. I have never found any spots in the practice of dentistry in which we did not have to be thorough. If you are taking the tartar off of teeth you must be thorough; if you are preparing a cavity you must be thorough; you cannot afford to be otherwise. Slipshod dentistry is not successful. There are no easy spots in the practice of dentistry. There is nothing so difficult as the practice of dentistry because it requires thorough work all the way through. Every step has to be thorough.

There are some important things in connection with this inlay proposition that the Essayist has not touched on at all, and one of them is the use of inlays for attachments for bridges, and I wish to give a word of warning to our younger men who are probably a little reckless when using an inlay for attachment for a bridge. You can get anchorage in teeth that are devitalized, or get excellent anchorage in mesio-disto-occlusal cavities, or pulp chambers.

As a general proposition it is hazardous to use inlays for attachments for bridges unless you get the anchorages I speak of.

Another point is with reference to the white area. Patients do not like the rubber dam, and while I use it in every root canal treatment and for every gold filling, still I do not use it very much in the placing of inlays, and I question whether there are many dentists who do. There is a way of finding out whether you have got all of the decalcified enamel removed, without the rubber dam. You can dry the cavity while you are preparing it, and before you take the impression; you can use absorbent cotton, you can use warm air, and in that way find out whether there is a white area there or not. If there is, extend a little farther.

I want to take another shot at Dr. Gethro because he is a friend of mine. If I got a correct impression he intended to say this: We should not alter the cavity side of an inlay or that part of the inlay that fits into the cavity. If that is what he intended to say, I would take exception to that statement. Personally, I think our poorest inlays are those which fit practically accurately against every surface of the cavity. What we want is good marginal contact; what we want is thickness of material enough around the margin to seal the cavity, and if you get a cement filling under this, and get the cement thick enough to have strength, it will be by far a better filling for that tooth than a plug of gold which fits the cavity in a film of cement.

A few years ago Dr. Conrad made the assertion that the bigger the crevice between the inlay and tooth the better was the filling. While that sounds very much like a joke, still there is a certain amount of truth in it. The bigger the cement mass, the more slowly will it disintegrate, but suppose you make a gold inlay fit as accurately to the walls as you can, consequently there is a thin film there which is apt to dissolve out, which is one of the weak points in the whole inlay proposition.

There is another point in connection with the technic which I wish to call attention to. Take, for instance, a mesio-occluso-distal in a bicuspid where the mesial and distal cavities run down well under the gum, to draw this wax pattern out without distorting it. If you put an instrument in it and draw you lift one side a little quicker than the other, and you destroy the pattern. I was driven because of these failures to use a gold staple. I now use a double

sprue, making a staple, about 18 gauge, or in some cases 16 gauge. If one of the cavities is deeper than the other, the wire will run down to the gingivae in both of these cavities. If you take a staple, which is a double sprue, warm it and push it into the wax, you have something that will draw on both of these cavities, and it keeps the wax from being distorted.

DR. J. G. REID, Chicago:

As has been said, the cement proposition is the weakest part of the inlay. These cements will wash out, and a larger proportion of the cement will disintegrate because of the pounding it receives in heavy mastication.

I want to ask a question and would like some of the gentlemen who opened the discussion to answer it. They talked about burnishing gold after the inlay had been set. I want to know when they do that, or when is the right time to do it? If you burnish gold around an inlay after the cement sets, you are certainly going to have trouble very quickly, because you have simply broken up the cement by burnishing the gold after the cement has become hard.

It takes a great deal more force to burnish a gold inlay than to burnish a gold filling. The specific gravity may be just a little more in the inlay than in the gold filling, but you can make a gold filling that is safe. If the specific gravity is greater it requires a larger amount of energy and force to burnish it.

DR. G. D. SITHERWOOD, Bloomington:

Like Dr. Dittmar I do not think it is necessary to use the rubber dam, because we have cotton rolls and we have spunk with which we can dry out the cavity, and we can use a watchmaker's glass and magnifying mirror and examine the cavity in a moment and see whether all the decay is cut out without troubling the patient to place the rubber dam. The proper preparation of the cavity and the making of the wax model that exactly fits the cavity are difficult problems. Sometimes I make the wax model directly from the cavity, and sometimes I make an amalgam die, as the case may be. I have cast gold inlays with the mould hot, and I have cast them with the mould cold. One day I thought why not cast them neither hot nor cold. (Laughter.) I tried casting them lukewarm, and was delighted with the way the cast came out of the mould. Now I cast them all lukewarm, neither hot nor cold, that is, the mould itself. I have always learned that when you invest a wax

model, the sooner you cast it after your investment is set the better. You should not heat it too hot, but just burn out the wax properly; then when you melt the gold have it to a white heat. You learn by practice and experience. I use the oxyhydrogen blowpipe. When the gold is properly melted there is a right time to press it down into the mould, and you will get such a fit that by using a fine cement you will not need to burnish that inlay, because it will fit, and this is particularly the case if you have pursued all of the steps properly.

I do not quite agree with Dr. Dittmar about the material extending a little over the margin of the tooth. I like to bevel it somewhat, but if I cannot press the wax down and into the cavity sufficiently so that I am sure I have an accurate fit of the wax model I will try two or three impressions with modeling compound and make an amalgam die where I know I can press the wax into place.

DR. EDMUND NOYES, Chicago:

There has been one point spoken of here which needs a little further elucidation. Dr. Allen stated that because a hammered gold filling would stand occlusal wear, therefore a cast gold inlay would stand occlusal wear. The two things do not follow one from the other, and Dr. Reid entirely confused the difference between specific gravity and hardness and softness. You all know if you have done any work in metal, that if you roll out a piece of gold it will be stiff and elastic and hard. If you put the same piece of gold in the fire and heat it red hot, it will become extremely soft, but the specific gravity will not be changed appreciably. In malleting a gold filling we harden the gold materially enough to improve its wearing qualities, and that is the reason why a cast pure gold inlay needs sometimes to be reinforced with solder. Dr. Sitherwood has suggested that instead of doing that, he would make the whole inlay of harder gold. I do not think I can give you the scientific points in that altogether, but practically we find that our inlays are more satisfactory if made of pure gold than of gold even of 22 carat; at any rate, if the margins of the cavity are beveled for the gold inlay in the same way that we bevel them for a gold filling it is possible to burnish the margins of a gold inlay while the cement is soft so as to get them a little closer than they are without burnishing, and as for taking so much force to burnish

soft gold on the margins, it does not take as much force as to burnish a hammered gold filling in the same situation. You can perceive that by observation and experience under your fingers as well as know it by the physical character of the materials. It is simply a question of physics.

There is one other thing I wanted to say about wax models, and not very much. It is a thing that requires very close observation and a very high degree of skill always to get a perfect wax model of a cavity. There are dangers enough in the shrinkage or expansion of a wax model, and the shrinkage or expansion of an investment, and the positive and unavoidable shrinkage of gold between the fluid and solid condition, to make as many chances of imperfection as we can possibly afford if we make the technic of our wax model as perfect as possible. My own belief is, in order to be safe in this respect, we should use wax that is not easy to handle, that is, which is brittle, at the temperature of the mouth. The chances of distorting the model in taking it out of the cavity are not more than one-fourth as great if the wax is hard enough to break like a piece of hard plaster, instead of bending, as it will do if the wax is soft enough so that by putting the burnisher on it, you can spread it towards the margin of the cavity in the condition you are trying to get it out. In the use of wax of that character you must take time; you must use skill. You have got to have a closely accurate temperature of the wax when it goes into the cavity. The only way I have found practical for myself, is to have a little water heater. I am sorry Dr. Taggart has neglected to manufacture and sell his electric heater, but I have a little water heater and a dairy thermometer, and it happens in my apparatus that with the button on the middle post it will maintain a temperature within two or three degrees of what I want all day long if I desire it and in two or three minutes I can get the exact temperature I want. There is not more than two to four degrees possible variation in the temperature of wax that you can use satisfactorily to make a model for a cast inlay.

DR. G. W. DITTMAR, Chicago:

I want to clear up another point that Dr. Reid referred to. He asked the question when we should burnish the inlay. It would be folly to attempt to burnish an inlay after it is cemented to position. The way I do this is to do all grinding and practically all

polishing of the inlay before I cement it to position. I have my assistant hold it firmly in position while I polish the gingival portion; then, as a final thing, I burnish the margins before I set it. I get the cavity thoroughly clean and the inlay clean, and the cement mixed as good as I can, cement it in position, and as quick as it is driven home I go over the margins with the burnisher, as there may have been a little distortion, and I hold that inlay in position until the cement crystalizes to a great extent. That is an important thing. If we do not, we are liable to find air or something which will push the inlay up the least little bit, a point I discovered in trying to make repeated inlays for Dr. Southwell, of Milwaukee, in a cavity of definite size. I made numerous ones and cemented them to position and they did not stand the pressure. They would leak under 15 to 20 pounds pressure. I made a couple of them and held them until the cement crystalized. I held them for half an hour, more or less, depending upon whether it was a quick or slow setting cement. They stood 60 pounds pressure by the machine.

DR. COOLIDGE (closing the discussion):

I feel very grateful that so much interest has been taken in the discussion of this paper. The inlay problem, like many other problems in dentistry, finally resolves itself to the personal equation of accuracy in technique. The things I attempted to bring up for discussion were some considerations not so often thought of as the technique, but are of equal importance to the success of the inlay. I also tried to call attention to some of the failures and the reasons for them.

In regard to cement, I believe we pay too much attention to cement. I do not consider it the greatest problem in inlay work. It is true the crystals may be broken and dissolution rapidly follow if the inlay is moved while the cement is setting, as Dr. Reid has said. Also if the inlay is too thin on occluding surfaces the forces of mastication may crush the cement by a flattening of the gold. This can be overcome by making a thicker inlay or by using a metal or combination of metals to give sufficient hardness to withstand this impact. If pure gold is used in casting it should be reinforced with solder on the proximal surface for bicuspid and molars but it is advisable to use a lower carat (22K.) for large restorations. A reason for the disintegration of the cement under inlays in some cases was suggested by Dr. Mack. After cleaning

an inlay in an acid solution to remove the investment, unless the inlay is reheated and the acid driven out of the minute spaces which are often in casts, the acid contained in these small spaces may have some effect to disintegrate the cement after setting.

In regard to the indications for gold inlays I would refer you to an article read by Dr. Dittmar before this society in 1908, and may be found in the August issue of the *DENTAL REVIEW*, as well as in the printed proceedings of that year. I believe the indications are as clearly outlined in that article as we can have them.

In extending a cavity in a bucco-lingual direction one must be guided by the requirements of the case. No more sound tooth structure should be cut away than is necessary to have access to all parts of the cavity and to place the margins of the inlay in a part of the tooth less liable to recurrence of decay. It is not a large cavity that is desired but one that carries out the principle of extension for prevention. Dr. Snyder spoke of using an amalgam filling in some cases to save cutting away tooth structure. He illustrated a wide extension of the cavity bucco-lingually at the gingival and narrowing down to a small occlusal extension. I believe the principle of cavity preparation as generally accepted would call for an extension of equal width at both these points making parallel walls regardless of the material to be used and the same rule applies to inlay work. I do not wish to be considered as opposed to the foil filling. I advocate one as strongly as the other where indicated. I do not think we will ever get away from the foil filling but the gold inlay is here to stay also.

It is too soon to make comparisons of the permanence of inlays and foil fillings. Gold inlay work is still young and the technique is not mastered or standardized as is foil work. When the different opinions become less widely separated and a more careful application of the technique, as originally given us by Dr. Taggart himself, is practiced, the results will be more satisfactory.

I do not believe it is a good plan to wash the wax with alcohol. I feel that more of our difficulty with inlay work is due to our handling of the wax than any other part of the technique work and the greater care we take with this the better results we will have.

I wish to call your attention again to the first part of the paper in which the relation of inlay work to recurrent caries was spoken of. I believe this is a very important consideration.

AMERICAN DENTAL SOCIETY OF EUROPE, FORTIETH
ANNUAL MEETING HELD AT FLORENCE,
ITALY, MARCH 21-24, 1913.

DISCUSSION OF DR. PIPERNO'S PAPER "THE PRESENT STATUS OF SOCIAL
DENTISTRY IN ITALY."

DR. H. W. C. BÖDECKER (Berlin):

In opening the discussion said he very much regretted that their friends Dr. Cunningham and Dr. Sachs were not present, either of whom with their large experience would have been able to deal with a great many interesting points. He did not think the ordinary practitioner who was not in touch with the movement realized the amount of work that had to be done. Personally he was very much surprised at it when he first became acquainted with it. A Memorial Clinic for his father was to be opened in Berlin for school children, the fourth to be opened in that city, and in arranging for that clinic he came more into touch with the movement than had hitherto been the case. All the members had read a great deal about the movement but he did not think most of them had any idea what it really meant. Personally he could only speak of Berlin. Berlin had just opened its fourth clinic dealing only with children who were not in a position to afford private treatment; whereas to really satisfy the needs in that direction it was necessary for Berlin to have at least twelve school clinics. The workers in those clinics did not, as was the case in some towns, simply perform extra work in that direction merely because they were interested in the movement. In Berlin the rooms were given gratuitously by the City Government each clinic having from six to eight rooms; and the staff consisted of the Director, who had two assistants, all of whom were very busy from morning till night. Their rush hours were after the schools closed. They had been successful in bringing the school commissioners to realize the fact that if a child really needed dental attention it was no use to tell a child to go to the dentist after the school had closed; it was of no use to keep a child in school while it was suffering pain. From early in the morning until 6 o'clock at night the clinics treated the children, and it was very surprising how comparatively easy it was to get the little ones to come to the clinics. In one of the clinics, which was very much overburdened with

work at present, during the past three months there had been a daily attendance of not less than eighty patients, while the number had gone up as high as a hundred and twenty-six in one day. It required more than the good will of a few men to cope with such a condition and the matter ought to be seriously taken up by the State. He thought it was the duty of the Society to thank such men as Cunningham, Sachs and Piperno for the work they had done in endeavoring to make the Governments and the Municipal Authorities realize their responsibilities. They were the pioneers in the work. But it must be borne in mind that the dental profession could never hope to contribute one drop to the ocean of expense that was necessary to really give all the children the treatment they required.

DR. N. S. JENKINS (Dresden):

Said the subject was one of the very deepest interest to dentists and of the most vital importance to the community. If through the labors of the apostles and their followers, who in the beginning taught the necessity for public oral hygiene, they, as a profession, finally accomplished that great work in every land, they would have done more for the good of humanity and for making a sturdy, healthy, capable race than any other department of medicine. It was of the very greatest importance that in every country as soon as possible the authorities should be convinced of the importance of the work. A very great degree of success in that direction had resulted in Germany. For instance, in the city of Strasburg, after the long continued labors of Jessen and those who had been associated with him, the Municipal Authorities had recognized that it was a public duty for them to establish school clinics and to pay for them on the ground of efficiency and of economy. An enormous amount of money was saved through the dental clinic, and far greater efficiency was obtained through salaried dentists whose only business was to devote themselves to that great work. Some of the instances were very striking. For instance, he believed that in Strasburg four female dentists who were in the employment of the city had accomplished vastly more work than three times their number of accomplished dentists had been able to do, who had simply given freely of their time after attending to their private work. That placed the responsibility in its proper place, and it also made it possible for the superiors to see that the work was

thoroughly well done. When it was being done by means of benevolence alone it was impossible to exercise the same degree of supervision. He was also much interested to hear from the Author that the investigations in Italy were bearing out the most interesting investigations of Rose in Germany upon the importance of there being a sufficiency of calcium salts in the drinking water of the people. In every way, one looks forward with very great satisfaction to the future, for a candle such as we see today, which has once been lighted in any land was bound at last to illuminate the whole nation.

DR. A. PIPERNO:

In reply, after thanking the members who had taken part in the discussion, said that while Italy could not compare for a moment with Germany in the work that was being done, he was fortunately in contact with Drs. Jessen, Rose and Dieck, who were, for him, the polar stars of the movement in Italy.

DISCUSSION OF THE PAPER BY DR. BETHEL ON "ORTHODONTIA AND THE ROENTGEN RAY—TWO CASES."

DR. W. J. YOUNGER (Paris):

In opening the discussion, said that about twelve years ago he had a similar case in Paris. The patient, a child, had been taken to Paris to spend a holiday. Her teeth were wide apart, and the grandparents thought they would like to have them fixed. Accordingly they took her to a country dentist who put on a band and made the statement that everything would be all right in the course of a few days. The same night the child suffered intense pain, which continued the following morning, her face being swollen. On taking her again to the dentist he asked where the rubber band was. A search was made in the bed and everywhere else, but the rubber band could not be found. The child continued to suffer; the teeth commenced to protrude; the gums inflamed, and subsequently pus commenced to form. The teeth protruded to such an extent that the child was brought into Paris and examined, and it was the opinion of everybody, even of the Faculty itself, that the teeth should be extracted. At that time he was giving some clinics at the Ecole Dentaire, Paris, and Prof. Frey stated when the case came before him that before the teeth were extracted it would be advisable to consult Dr. Younger. Dr. Frey in making investigations with an instrument discovered something which seemed to

be white, and which on further investigation he found was a rubber band, but the teeth continued loose and considerable pus was flowing from the sockets. The child was brought to him (Dr. Younger) and he discovered a little encrustation present which he removed. He tied the teeth to the laterals, which were just to be seen, forced the teeth back into position, and in the course of time they became quite firm again and they had a very good appearance. Pyorrhoea subsequently occurred induced by the irritation of the presence of the rubber bands.

DR. H. W. C. BÖDECKER:

Said the subject presented by the essayist was not a very common one, such accidents not often happening. He was not surprised that the rubber band did not show up more because long soaking in acid pus was bound to change the rubber physically so that it was a good deal more translucent to the Roentgen Rays than a fresh rubber band would be. He wished especially to remark that the first Roentgen Rays could have been taken with small films. It was a well-known fact that the making of Roentgen pictures for dental purposes should be done by a dentist and not by a man who had a Roentgen laboratory who had specialized in making Roentgen pictures of joints and the thorax and doing therapeutic work and so on. Dentists required special points to be brought out and it was only the dentist who knew what was required who could make the pictures so that it was possible for the dentist to find what he was looking for. He was driven to the conclusion that if a good picture was desired the dentist should make it himself. He emphasised the fact that sooner or later every dentist would have his own Roentgen outfit. Even though patients were sent to the most expert Roentgen Laboratory and a very good diagnosis was obtained on the photograph, it was never as satisfactory as if the dentist had done it himself, because in looking at the picture and comparing it with the original it was not apparent from what point the picture was taken. It might have been taken at a great inclination or fairly flat. Any slight variations in the horizontal direction could always be recognized by the overlapping of the teeth, but otherwise very little was known of the direction of the rays when looking at a Roentgen picture. For that reason he suggested that if a patient was sent to have a Roentgen picture taken he should

be sent to a man who specialized for dentists, but preferably the dentist should take the picture himself.

DR. H. H. BETHEL:

In reply to Dr. Younger's remarks, said it was a matter of very great regret to him that the cause of the loosening of the teeth was not discovered. The very best was done for the patient. He probed after a rubber band, because a rubber band was suspected, but none of those concerned were able to find it. Reliance was therefore placed upon the Roentgen Ray, but the Roentgen Ray was not able to find it either. With regard to what Dr. Bödecker had said, in all probability the composition of the rubber had been altered to some extent so that it offered no resistance to the rays. With regard to the question of dentists taking the pictures themselves, they were not all in such a position that they could take Roentgen Ray photographs, and had not the necessary apparatus to do so. The little films were tried first. As the members knew they had to be enveloped in a waterproof substance which made then a little bulky, but as satisfactory results were not obtained in that way the child was simply laid on a plate which would take the whole head, and the head tipped at such an angle that the rays penetrated, not through the jaw taking both sides at once, but from an angle that allowed the two sides of the jaw to escape each other in the photographs as they were finished. The results were satisfactory enough to establish the conditions that they were seeking.

DR. F. AGUILAR (Madrid):

Desired to support the remarks Dr. Bödecker had made in regard to the taking of Roentgen Ray pictures. The Kodak people made at the present time what they called Kodak Roentgen films which were already prepared in envelopes the size of a large postage stamp. Each envelope contained two films, which possessed the additional advantage that they could be developed at different intensities, one being made very strong and the other lighter. He had found them most practical for taking Roentgen pictures in the mouth. He had an apparatus which he had been using for the last two years, and he supported Dr. Bödecker's view that it was a most useful adjunct in the office. Once the dentist became accustomed to its use it was impossible for him to do without a Roentgen Ray apparatus, and he strongly recommended to the members the Kodak films which were very practical for the purpose.

CHICAGO DENTAL SOCIETY.

A regular meeting of the Chicago Dental Society was held on Tuesday evening, April 15th, 1913, at 7:45 P. M. in the University Building.

The President of the Society, Dr. James H. Prothero, occupied the Chair.

A symposium upon "Methods for the Relief of Pain During Dental Operations" was presented in three papers as follows:

Dr. W. H. DeFord, Des Moines, Ia., "Analgesia in Dentistry."

Dr. W. T. Reeves, Chicago, "Desensitizing Dentin with Compressed Air."

Dr. Elmore W. Elliot, Chicago, "Obtunding Dentin by Means of Local Application."

DISCUSSION.

By DR. A. E. SCHNEIDER:

Why is there such a turmoil at the present time throughout the profession over the subject we are discussing this evening? It is not a new subject being nearly as old as the history of anesthetics. Is it not a reflection on the scientific element of our profession to think that it has taken from the time of Dr. Wells, the discoverer of N_2O until now or from the time of its combination with oxygen by Dr. Andrews of Chicago, even until the present time for the fact to be forced upon the attention of our scientists by almost the laity itself before they will turn a willing ear to its many blessings and make any attempt whatsoever to educate our embryo dentists scientifically in the administration and handling of N_2O or any anesthetic whereby we may be able to relieve humanity of the terrors of the dental office? Does it not seem unbelievable that as soon as the anesthetic was discovered some scientific body did not at once investigate every side light of anesthetics and anesthesia? Ignorance, in the eyes of the law is a crime. Why, then, did not our institutions of learning inaugurate at once a scientific course of instruction so that the professional man may surround himself and his patients with every possible precaution instead of forcing some one member of our profession, who is thoroughly versed in this line to inaugurate a course of instruction and present it to the profession in most every instance with the opposition instead of the assistance of these same institutions. Why allow ignorance or

prejudice to stand against enlightenment that will benefit not only the dentists but the laity as well? Almost without exception the danger in handling an anesthetic is unpreparedness or ignorance on the part of the anesthetist. I earnestly hope that every dentist in our city and in fact elsewhere will make every effort in his power to investigate N_2O and O , even though he has been using it in his practice to an extent, so as thoroughly to armour himself against accidents in its use. I want to advise, right here, against any cheap policy in the attainment of this knowledge. Do not be satisfied with the showing made by some nurse, dental supply salesman or a novice at the game. Go to one who stands eminently and from whom you can get all the information essential to an intelligent handling of this anesthetic. I realize you expect of me a detailed talk or discussion on this excellent paper by Dr. W. H. DeFord on N_2O and O but instead I am going to present to you the attitude of the laity and the professional, analytical mind at one and the same time. I have with me a physician of attainments, one who has administered anesthetics for years, a former member of the faculty of Washington University, St. Louis, Mo., and a master mind in all that pertains to X-ray procedure. A man who doubted the efficacy of N_2O and O as pertains to Analgesia, but with the true scientific attitude—a mind open to conviction. I will let him tell you his story in his way. I introduce to you Dr. H. P. Wells.

DR. H. P. WELLS:

Mr. President, I am grateful for this opportunity to get into a professional atmosphere again. I have somewhat unworthily been proselyted to the commercial field. When listening to Dr. DeFord's paper I was induced to think of what I am almost going to dignify by calling an axiom or epigram, to the effect that the sympathetic dentist may be unfitted for his work and that the unsympathetic dentist is always unfitted for his work. I am sure that had Dr. Schneider not given a willing ear to my pain I should have felt that he was quite as unfit as the accoucheur or physician who allows a patient to lie on a bed of suffering and not give a few whiffs of the God given chloroform to the woman in child-birth. Chloroform is a veritable breath from heaven.

Now to me from a scientific standpoint the "why" of this subject is a great deal more interesting than the "how,"—the psychic

as contrasted with the physiologic or more practical side of the subject, and to say a few words on the psychic side of the question might serve to allay some of the doubts of those who have not gone at all into the scientific aspects of the analgesic manifestations of any anesthetic. We know perfectly well that the anticipation of impending calamities is often the greatest part of the calamity. We know that the pains of anticipation are far more acute than the realization of the impending danger. When you have put the patient through an hour or two of anticipating things that never happen he is in almost as deep a shock as a patient who has just come out of a serious operation.

I think when Dr. Schneider asked me to come here it was more to tell you how I as a patient appreciated the effects of what they did for me, and less to tell you why, from a scientific standpoint it should be used on others. I will just make this one observation, that it seemed to me that nitrous oxid took possession of the higher part of my sensorium, that part of my brain which had to do with the acute appreciation of pain. It did not remove the actual tactile sense. I felt every touch of the instrument, and of the doctor as he would come in contact with my face or chin,—felt it with all my usual sensitiveness. If my mouth had not been filled up with instruments I could have talked. I think I would have said: "It hurts Doctor, but go ahead as far as you like." While I was appreciative of the concomitance of pain, there was none of the nerve racking pain that actually does hurt. I had none of that. Now that certainly can only be explained by the dominance of the subconscious over the higher sense of consciousness. I think Dr. Willis Barker would explain it by saying that there was a little neural disturbance in connection with the peripheral organs, and yet not such a complete disturbance as to separate the senses of the cardinal centers from the external or peripheral organs of manifestation.

Now as to the justification of the dentist for using it, bringing into consideration the question of mortality, and the distinction between this and that anesthetic agent. As far as I know and remember there has been but one nitrous oxid death in several hundred thousand administrations. When any statistics give you that result you can get up a pretty good argument. Is not the literature full of cases of death from shock pure and simple, simply

from the effect on the nervous system, brought about through sight and hearing? I would very much dislike to think of you gentlemen as being on a parity with some of our less progressive theologic gentlemen who are led by their congregations, and do not lead the congregations. I do know that you can get better mechanical results and you can do more work at a given session and handle the patient with less fatigue by this method. Those are arguments enough, but you could pile them up as high as this room.

Gentlemen, you come by this anesthetic most naturally. Isn't it your birthright? Who is the discoverer of nitrous oxid? Who gave it to you? A dentist. If you do not avail yourselves of it, it is past understanding. I do not understand why some dental colleges do not give a course on this subject.

D. L. L. FUNK:

Apropos to the subject this evening I wish to make known to the profession my discovery and experience with what I term "Drugless or Mechanical anaesthesia."

In my experimental work it has always been my principle to learn as much as possible about the subject material. The subject under treatment here is desensitizing animal tissue. In my work along this line I tried to discover what sensation is and the cause for it, I began my study with the aura. I found the aura to be an illuminant effect composed of several spectral rays—rather than an entity. I also found the aura to emanate from what I call the auragen, which is composed of and sends out several principal lights or colors, these constitute human life, inert, motor and conscious. Five rays corresponding to the five senses constitute consciousness. It occurred to me if I could absorb the lights mechanically, sleep unconsciousness and insensibility to pain would result. In this I was more or less successful.

ROTARY ANESTHESIA.

Rotary Anesthesia is accomplished by placing the patient on a rotary stool or turn table and whirling the subject until dizziness and unconsciousness ensue, or an analgesic condition may be maintained. By placing the patient on the table with the head in the center and the feet toward the periphery of the table and whirling, the centrifugal force draws the blood from the head to the opposite extremities, thus hastening anesthesia. (This would also be beneficial where there is a tendency to poor circulation in the extremities, and also other pathologic conditions, such as cancer, etc.)

My experiences with lower animals were rather varied. Canary birds become unconscious in a few seconds with comparatively slow revolutions. Mice will maintain their equilibrium for several minutes, under two hundred revolutions per minute in a small diameter; four hundred to six hundred revolutions for five to ten minutes renders them quite groggy. Gold fish are little affected by six hundred revolutions for fifteen minutes, but one thousand to fifteen hundred turns will very quickly cause them to turn belly upward and remain motionless. Animals seem to suffer no ill effects from such treatment as they are up and about eating in a very few minutes.

AUTO ANESTHESIA.

Auto anesthesia can be produced by deep violent mouth breathing, panting as it were.

Mechanical or deep tone vibrations centered in the region of the Frontal Sinus will suspend sensibility.

Inflating the Frontal Sinus under pressure will also produce insensibility.

Much valuable information and inspiration can be obtained on the subject of Anesthesia from the *American Dental Journal*. Its editor, Dr. B. J. Cigrand, is alive to every point of progress and dares to tell the truth about things of a progressive and beneficial nature. His ear is always open to honest suggestions from any person regardless of his nationality, color or position and this I consider a wonderful virtue. *The American Dental Journal* should be in every dental office in the land.

DR. C. KABELL:

Mr. President, I am the fortunate or unfortunate possessor of an analgesic apparatus, unfortunate I mean in the light of what I am going to say.

I have quite a success with it in rather an odd way; whenever I say to my patients: any time that you think that it hurts too much, the apparatus is at your services, they will answer: all right, but I guess I am going to stand it without it. (Laughter.)

To tell about a specific case: a lady came to my office and told me that she could not stand it without taking something because the least pain makes her faint and she is subject to fainting spells anyway, and so on.

Now, I don't like to give gas to persons that faint easily, but I said: "All right, sit down, I will give you something." Well, I

gave her the gas twice and at the third sitting I had her that far, that she said, she could stand the drilling without it. (Laughter.)

There has been very much said tonight about the mental attitude of the patient. "The fear is greater than the pain" is an axiom but in what I am going to say now, lies probably the whole secret of analgesia.

Under analgesia the patient has no time to think about pain, he is not afraid of it, because he worries all the time, whether he is going to escape alive or not.

Another thing: the greatest pain I inflict in my office is the removal of occasional pulps. Now the analgesia demonstrators will tell you, that for pulp extraction the patient has to be unconscious. That would mean in the case of a molar with crooked roots, that the patient will have to be an hour or so under the anesthetic.

If this becomes common practice, I wonder, whether gas will still keep its record of one death in 300,000 applications.

DR. C. N. JOHNSON:

Mr. President, I want to express my appreciation to Dr. DeFord for coming here this distance, to Dr. Reeves for the scientific paper he has given us, and to Dr. Elliot. They are all good papers, worthy of close study, and I predict that they will do a great deal of good, but some of our discussion may do harm. Now, Mr. President, in all of these papers I believe one significant thing was mentioned, and that was the psychological effect of all of these procedures. It is the most important effect that has been produced, and by way of illustration I would like to refer to a certain incident that occurred in Chicago when cataphoresis was at its height. A gentleman had a tooth filled with absolutely ideal results. He got out of the chair and said: "I shall never have a tooth filled by any other method." He came in soon after for another operation. It happened that the cataphoric outfit was out of commission, but the dentist had a head on him. He seated the patient in a chair, made the application the same as before without any cataphoric action whatever, prepared the cavity and filled the tooth. When the patient got out of the chair, he said: "I declare it is better than I thought it was, and I've decided never to have a tooth filled any other way." That is an actual fact. A great deal of the analgesia of today is the same thing. A man who has that psychic power in him does not need to use an analgesic every time he puts his patient in the chair. I believe I can lay claim to as much sympathy for my

patients as any man, and I deplore the necessity of giving pain. But if I should introduce into my office an outfit of that kind, I do not believe I would use it very much oftener than Dr. Kabell. I believe we can handle the patient without asking him to take analgesics in every case. I do not believe it is to the advantage of the patient to encourage the use of these things in the office. I believe we should do every thing we can to allay the apprehension many individuals have of dental operations, and it is a splendid thing to show the patient that we are willing to do something to relieve them of discomfort. I have this conviction as firmly as anything, that if you and I will study human nature, and study kindness and delicacy of manipulation, showing the patient that we have an interest in him, the patient will co-operate with us, and we will to a large extent remove that dread of operations, and thus get along without all this paraphernalia. I do believe that in ten years from now we will hear less of analgesia than we do tonight. I do not believe it is for the benefit of the people to encourage them in these things. Somebody said that pain was beneficial. I do not believe in carrying it so far that it becomes a shock. If we have a capital operation by all means administer these things intelligently, and get the most out of them. My patients complain as much of other things as they do of sensitive dentin. They complain of the inconvenience as much as they complain of the pain. They complain of the application of the rubber dam. They complain of the buzzing of the engine as much as the actual pain. I believe if we will study these people, and develop a sympathy for them, getting their point of view, that we will eliminate a great deal of this dread of pain without the administration of so many drugs.

DR. G. N. WEST:

Mr. President, I would like to state something in my experience that occurred in 1888 regarding the effect of the mind on the patient where I produced cocain poisoning with distilled water. The patient expected the use of cocain, and under the circumstances I positively refused to use it. I was supposed to accede to the patient's request, and took the husband and a friend as witness. I drank a glass of it to prove that there was nothing in it. One drop put on the gum tissue took away the effect of the hypodermic needle, and produced all the effect of cocain poisoning that the patient had been reading about. Not only that, but she fainted away four times

in fourteen minutes, and during one of these spells I removed the tooth that was the cause of the trouble.

DR. L. H. ARNOLD:

Mr. President. It has been a pleasure to listen to the paper of a man who is plucky enough to come clear across the state of Illinois to read his paper when he is so far from well as we know the essayist to be. And while we appreciate the man we appreciate the man's paper as well.

We perhaps all may not agree with the use of somnoform that he mentioned but otherwise there can be but little dissension from the sentiments advanced and the essayist has covered the ground so thoroughly that little is left to discuss.

I would like to ask, however, if any of those using nitrous oxid and oxygen analgesia have noticed the very peculiar sort of vomiting it sometimes produces?

The analgesic has been in use in my office upwards of two years and two styles of apparatus have been used for controlling the gasses, and in that time two cases of this kind have been observed and the characteristic features of the vomit were the same in each case.

The first was a little girl eight or nine years old who came to me right from school but who had "had a bite to eat" in the form of a few graham crackers on the way.

She took the gasses badly, that is did not respond to their influence readily and the result was not satisfactory though the administration was prolonged to about 15 or 20 minutes. Just as the operator was about to remove the inhaler there was a peculiar but very free welling up of the contents of the stomach. Just rolled right out of the mouth: No wrenching or spasm nor very much discomfort other than the "mess" but the mass just flowed out of the mouth as if the entire stomach had been firmly compressed with the intention of emptying it completely. The other day the same thing occurred only this time the patient was an adult female and she told me after that she had eaten rather freely of rather heavy food about an hour before the administration.

The remarks of Dr. Johnson are timely and to be borne in mind, but the plan of gentleness and kindness which he advocates was one of our departed friend Dr. Geo. H. Cushing's strong points.

His oft repeated and strong emphasis on "Delicacy of manipulation" are well remembered by all his students.

That gentleness, kindliness and sympathy Dr. Johnson refers to have been advocated many years and tried faithfully and earnestly by thousands of conscientious dentists but many failures have resulted, as well as some success.

Some things undoubtedly can be done in that way but much pain cannot be eliminated by all the sympathy in the world. While we must not go to extremes at all and Dr. Johnson's warning is thoroughly well timed, still it hardly seems that we should cling exclusively to the old theories that have been so long and faithfully tried and so often found inadequate.

DR. A. H. MURDOW:

Mr. President, I want to say that I agree with Dr. Johnson. I have heard dentists say that they hated to see children come in their office. I cannot understand that, because a child can be handled successfully, and I do not think one-tenth or one-hundredth of the patients who come into my office would allow me to use analgesics. I have an old cataphoric apparatus locked away that looks almost new. I tried to use it, and in the few cases I did use it I had fairly good success. I cannot find in my practice that it is called for, as I can handle the patients that come into my office to the extent that they are glad to come. I have never seen but one child I could not handle, and she lived in the town only three months. I think if she had lived there longer I could have handled her.

DR. F. B. CLEMMER:

Mr. President, I have been using the anesthetic, and I intend to use it on every needed occasion, for I am having results. I have had some cases that were not an absolute success, but when I can fill from six to ten cavities, and fill them at one sitting, and patients tell me there is no pain, there must be some truth in it. I worked for one party who tried to faint three times. She took the anesthetic, and said: "What a fool I was to act that way." There is not a person who comes into my office that I do not talk to as a father to a child, and you may know I get results.

DR. MURDOW:

I think the gentleman is possibly laboring under a misapprehension. I have kept patients under nitrous oxid for an hour at a time, but I quit using it years ago. In some cases I have had good results, while in other cases the results have not been so satisfactory. The patients who need it most are the physicians or dentists. They are the greatest cowards who come to the dental office.

DR. CLEMMER:

I did not have any personal reference at all. A gentleman said his outfit was there, and they could have it if they wanted it. My outfit is always there, and they usually get it. If a physician can remove pain why should not the dentist do the same thing? A little English lady came to my office about four months ago, afraid to cross the threshold. Anyway she came in and complained of a root that was giving her a great deal of trouble. It took one hour to get her to the chair and allow me to give her a local anesthetic and remove the tooth. I got her confidence and did her work. In the meantime I had taken up the analgesic part of the work, which was for a four tooth bridge. I suggested that I use the apparatus and cut those cavities. She allowed it to be done, having seen a boy have six anterior cavities prepared. I asked him in her presence: "Does this hurt?" And he said: "No, not a bit." I used the apparatus on her, and she sat there and smiled as I worked. She is now wearing that bridge. If that is not advancing the profession I don't know what you would call it.

DR. L. L. FUNK:

I wish to speak of a lady who came to Chicago to have her teeth fixed. She consulted a dentist who told her it would take two or three days to remove pulps. Later she came to me and I used pressure anesthesia (originally known as the Funk method), removed pulps from teeth, crowned them and filled several other teeth, the work being completed in one day.

She said to me: "That is the first time in my life I have ever been in a dentist's chair without fainting away two or three times."

DR. DEFORD closing the discussion:

Mr. President, I have been amused at the discussion of these papers. There remains very little to be said by me as no one has made any objection in a specific way to any of my statements or claims. Dr. C. N. Johnson in a general way has opposed the use of general anesthetics for dental operations, and I agree with him to the extent that it is entirely unnecessary to employ general anesthetics for every patient for whom we operate. But in all those cases in which the pain inflicted is severe enough to prevent ideal cavity preparation, or the removal of every trace of dental caries, or displacement of salivary concretions, and even when by means of comfortable operating considerable time can be saved to both the

patient and operator, I believe in analgesia induction. Some dentists are in the habit of condemning everything advanced by other members of the profession that they themselves cannot do skilfully. Men timid about the administration of general anesthetics, and others who have not the temerity to try, find it more convenient to knock, oppose and condemn a procedure they have no practical knowledge of whatsoever. There are many conditions we meet with in daily practice that can be handled better by the employment of general anesthetics than in any other manner. For instance, a patient presents with a case of incipient acute septic apical pericementitis in a lower molar. This tooth is so sore that even the touch of the tongue causes excruciating pain. In a few hours an acute alveolar abscess will result, with its attendant and resultant concomitants. It is almost out of the question to enter the pulp chamber of such a tooth for vent of gases. Consequently the gum is painted with iodin, and the patient sent home to combat, the best he can, the severest pain which can be inflicted upon a mortal, as acute alveolar abscess will rapidly develop. By the use of somnoform or nitrous oxid, in two minutes the pulp chamber of such a tooth could be entered painlessly, drainage established, relief instantly afforded, three or four days of torture prevented, a chronic alveolar condition avoided.

During the winter a patient came to our clinic a distance of forty miles. We found deep saucer shaped cavities in five of the lower anterior teeth, gingival cavities, labially situated. They were so deep that the pulps would have died under any kind of a filling. They extended below the gum margins making it impossible to adjust the rubber dam. They were that sensitive that drying them with cotton caused the severest of pain. They could not be properly cut to retain arsenic with cement. What can be done in a case of this kind, especially when the patient has to come long distances? I administered somnoform just as for tooth extraction, and with a large bur opened into the pulp chamber of each one of these five teeth, and the time consumed from first inhalation was less than two minutes without the slightest pain or knowledge of the operation. Plenty of time remained to have removed all of these pulps with a broach, but the case was turned over to a student in order that he might continue the operation with pressure anesthesia for the experience.

I am sure you will be delighted with analgesia if you will try it. You can do more work and better work in the same length of time. Some one has remarked that it is impossible for him to get patients to take a general anesthetic. These same patients would never have a rubber dam adjusted if they could help it. My method has been when I feel that analgesia is indicated, induce it, just as I would use any other instrument or appliance that seemed appropriate for the operation at hand. We do not stop and ask the patient if we should make an application of arsenic or cocain or iodin, or if we should adjust the rubber dam. We should be big enough and broad enough and courageous enough to do what is best for a given case, because we are in every sense of the word, surgeons, and just as other surgeons employ general anesthetics when they are indicated, so should we.

DR. REEVES closing the discussion:

I have always been a firm believer in putting the patient in the right mental attitude for having work done. I have always been successful in preparing cavities, and I can truthfully say that during a period of a little over eight years, that I have used compressed air in this way. I have been very conservative in my statements as to results. Over seventy-five per cent. of all cases under all conditions have been prepared without pain. The great advantage is its extreme simplicity and quickness. Before you have your instruments ready, the patient is prepared by your assistant, and you can go right to work. I work as fast as the engine runs, and I will prepare a cervical cavity complete inside of five minutes, while other cavities are finished in the same proportion. It is seldom that molar cavities take more than twenty minutes. When you can have the patient comfortable, I think it is worth while for you to make the effort.

DR. ELLIOT closing the discussion:

I am very glad to have heard Dr. Johnson's talk. While I think analgesia is a good thing, still I think we are apt to push it a little too far. It seems to me we need a little more of the balance wheel as suggested by Dr. Johnson. Try drugs, as I have mentioned this evening, and try a little suggestion and other means. Do not resort to gas without at least finding out whether or not it is necessary. There is no question but that it is a good thing, but don't push it too far.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

A MISSING LINK.

In the splendid chain of equipment which we have today for saving the natural teeth when they are attacked by caries, there is still one deficiency which must yet be made good. We have at our command gold and porcelain inlays, foil fillings, amalgam, gutta percha and the cements, each of which in its way is worthy of due consideration. In fact it may be said that if teeth are taken in time they need never be lost through dental caries.

But there is one situation which to meet perfectly taxes all of our ingenuity, and for which we yet lack the proper equipment. This relates to cavities in the anterior teeth which are exposed to view. It is not enough that we are able to save these teeth—we can do this with gold foil or in some instances with gold or porcelain inlays, but in our modern civilization the necessities of the case demand that we shall save them without displaying any evidence of our operations. This we cannot do with any of the materials at our command. It is true that porcelain has long been heralded as the *ne plus ultra* of perfection so far as esthetics was concerned, but even porcelain cannot be held without fault in this particular. In many cases we know that when porcelain is first inserted the esthetic effect is good but in a few years in most mouths the tell-tale line of junction between porcelain and enamel shows up to mock our efforts. It is safe to say that less porcelain is being used today than five years ago, and it is largely due to the disappointment in results after years of service.

The thing at present which seems to be largely supplanting porcelain for filling anterior teeth is the silicate cement in one form or

another. This material may be said to be passing through its period of test, and no man can predict with accuracy what its future may be. It assuredly can be made more satisfactory in appearance than even porcelain, and the great question which looms high on the horizon of every conscientious practitioner is as to its ultimate permanence. In some instances it promises sufficiently in this respect to justify us in using it, but always with the mental reservation that we dare not promise the patient how long it will remain satisfactory. To be always puttering with a material of which we are never certain is a sad blow to our highest ideals, and the fact remains that today we are suffering from a missing link in the armamentarium with which we are equipped to save teeth.

Who will be the genius to supply dentistry with this great need?

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS. ANOTHER VACATION STORY.

(Continued from the August issue.)

AT MELBOURNE.

After the trip to the caves we started for Melbourne, Victoria, where I had several engagements to meet the different societies. Before I left Chicago I had received an invitation from the Odontological Society of Victoria, and while at Brisbane the president of the Dental Graduates Society of Victoria, Mr. Geo. C. Nicholson, extended an invitation on behalf of his association, and Mr. Iliffe had asked me to address the students of the Australian College of Dentistry.

On the way to and from Melbourne we found the railway trains absolutely devoid of heat and consequently very uncomfortable. As a sop they place a foot-warmer in the carriage, but of course this has no effect on the temperature of the car. We saw men sitting in their seats in the sleepers with overcoats and gloves on and wrapped in their steamer rugs to keep warm. It is a cheerless process traveling in midwinter in Australia. Then of course we had to change cars between New South Wales and Victoria, and equally of course

this change had to be made early in the morning. I shiver as I write about it.

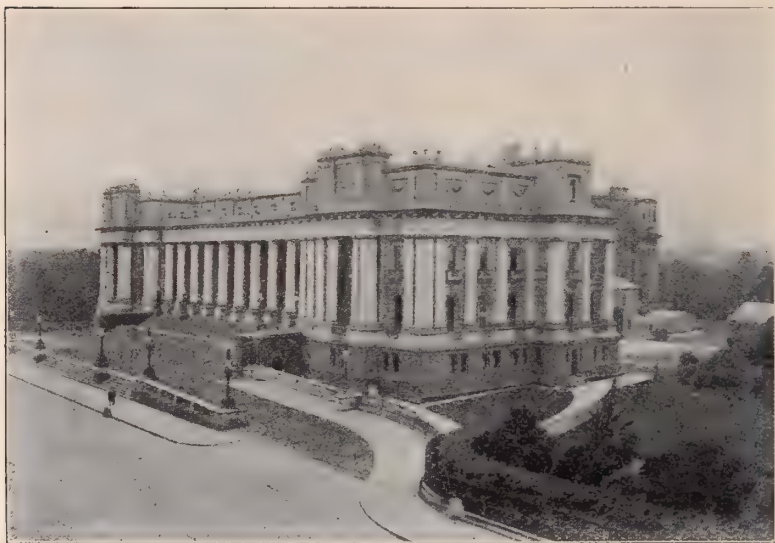
But aside from this our journey down was made most pleasant by visiting with members of the profession who were returning after the Brisbane meeting. Mr. Percy Clark of Melbourne—to whom we were indebted for many courtesies while there—Mr. C. H. Steele, who told me of a new kind of automobile which I must see in Melbourne, called the “Charley Car,” and of which I shall write more in detail later, and Mr. R. G. Sharp of Hobart, Tasmania. All were extremely kind to us.

It was on this trip that we saw something significant regarding the conditions which exist in Australia. They had been suffering from a drought, and as a result we saw lying in the fields and along the fences the dead carcasses of domestic animals which had perished for want of water. I said to Percy Clark, “Isn’t there anything they can do to prevent such terrible suffering as that?” He said, “Of course there is. They can dig or drill any place about here and strike water. It is merely shiftlessness on the part of the average farmer.” Life is made altogether too easy for the people in Australia. They expect Providence to do everything for them while they sit still and trust to fate—and then they whine if fate hits them a lick. During one drought an eminent minister was petitioned to pray for rain. He declined flatly. “You do not conserve the water when you have it, and you need a lesson in foresight.” So Providence was permitted to do as it liked so far as that minister was concerned.

As we neared Melbourne the Mater remarked that we should probably see no familiar face when we alighted from the train. I said, “No, I do not expect anyone to meet us, but we can easily find the hotel.” I soon learned that I was not yet familiar with all the angles of the Australian game. When the train stopped we found awaiting us a delegation from each of the dental organizations of Melbourne, and we were soon surrounded by friends new and old. An automobile was waiting for us and we were soon whirled up to the Hotel Menzies—by the way, one of the very best hotels in Australia. Just as we drew up in front I exclaimed, “Hello, look at that: There goes a new Pierce Arrow.” I actually feasted my eyes on that car, and could have hugged it for very joy. I saw American cars everywhere, but to see my own particular pet when I was nearly

10,000 miles from home had a peculiar effect upon me. I wanted to go up to it and fondle the brass a bit, and take hold of the wheel, and lay my ear down near the engine and listen to the hum of those six cylinders. I fairly ached to push my fist into the soft cushions, and brace my feet against the pedals and touch the gear lever. I would have given worlds to have a smear of the black oil down the side of my nose, and my hands dripping with grease. I—but hold, this kind of insanity must cease. When a man gets as far gone as that it is about time to bring him back to mother earth.

We found Melbourne a beautiful city with great wide streets



Parliament House, Melbourne.

perfectly laid out and flanked with fine buildings. It reminded us more of an American city of the same size than anything we had seen.

We arrived about the middle of the afternoon on Monday, and that evening I addressed the Odontological Society till 10 p. m., after which a complimentary supper was tendered me by the society. And here I was treated to a real surprise. The notice of the meeting was of necessity very short because of my uncertain plans. In fact the president, E. F. Greenwood, and another official, W. J. Tuckfield, who took especial care of me in Melbourne, were in

Sydney at the dinner given me by the Dental Council of New South Wales on the previous Wednesday night, and they had to make all the arrangements for the dinner in Melbourne after their arrival from Sydney. Notwithstanding the brief notice there was a large audience at the lecture and a splendid turnout at the supper, the large banquet hall in the Savoy Cafe being filled. But what astonished me most was the character of the menu card. For a hurried preparation it beat anything I ever saw. The cover was decorated in colors with the Australian and American flags intertwined. Over the toast-list was the cut of a bear carrying the Stars and Stripes, and after each toast and before each article on the menu was a most appropriate sentiment. I can make space for only one, the toast to "The President of the United States." The sentiment was from *Anthony and Cleopatra*, as follows:

"High in name and power,
Higher than both in blood and life."

Those men of Australia can teach us how to do many things in a most graceful manner. They did me the courtesy of electing me to honorary membership in their society and I was also presented by the president of the society with a boomerang tied with a bouquet of their national flower, the wattle. Altogether it was to me a most delightful evening.

Tuesday morning I had the pleasure of visiting the Melbourne Dental Hospital and Australian College of Dentistry under the guidance of Mr. Greenwood, and Mr. Fischer, the capable superintendent, and saw the students at work. I was much impressed with the excellence of everything in this institution and the apparent earnestness of the students. In the afternoon I gave a table clinic at the college, after which a tea was served in my honor. That evening I was the guest at dinner of the Council of the Australian College of Dentistry, and after dinner they took me to the theater, and from there to the Savage Club—a very interesting place with all the paraphernalia of the ancient savage races decorating the walls. A chapter could be written on this club but I must hurry on.

Wednesday morning I had the pleasure of delivering a lecture to the students of the college on the subject of "Ethics," and after the lecture the class presented me with an album containing the signature of every student in the institution. In addition to this the boys sang a song which they had written for me, and I have never

in all my career felt myself more signally honored than I was by this occurrence. I have a copy of that song now in my desk, and I would willingly travel many a long mile to hear those lusty voices ring out the words as they did that morning. Heaven bless the boys of today—they are to be the standard-bearers of the profession tomorrow.

That night an "At Home" was given in our honor by the Dental Graduates Society of Victoria, consisting of a dinner and theater party. Again the menu cards were decorated with the Stars and Stripes and the Australian flag, over which was printed the motto,



Bourke Street, Melbourne, Looking East.

"United May We Ever Stand," while the last item on the program of the evening was "Hail Columbia." Can you beat that for hospitality?

The president, Geo. C. Nicholson, announced that I had been made an honorary member of their society and said some embarrassing things about me, as did also Mr. C. B. Hays, formerly of Canada, in proposing the toast "Our Guests." Then Dr. Geo. E. P. Payne Philpots, whom I had met in America several years ago, was introduced and took away all the self-assurance I had left by presenting

me with a boomerang made by one of the Australian aborigines and carved by him with his own initials. This boomerang had been obtained by Dr. Philpots directly from the man who made it, and I prize that treasure more than I can express. To add to the delicacy of the gift the boomerang was tied with the colors of the Chicago College of Dental Surgery—my own college—and sealed with the seal of the Dental Graduates Society of Victoria. The thoughtfulness of those men knew no bounds. President Nicholson also presented me with a plate decorated with the society's seal, and Dr. Philpots gave me the model of an impression he had taken of this same aborigine's upper jaw, showing extensive decay of the teeth even among the native blacks of Australia.

After the toasts were over the ladies were sent to Her Majesty's Theater, and I did some talking on a technical subject till about the second act when we joined the ladies and thoroughly enjoyed the play. After the theater Dr. Philpots seemed to fear that my family must be nearly starving and so he inveigled us around to a restaurant and gave us an after-theater supper.

We were to leave for Sydney the next day at 5 p. m., and that morning bright and early my good friend Mr. Greenwood called to take me out to see the new automobile—the Charley Car of which I have already spoken. This is a car arranged with springs in such a manner that the shock of rough places in the road is practically all absorbed by the springs and is not communicated to the body. There are coils running longitudinally below the body as well as the uprights and the effect is wonderful. With this construction it is possible to use hard rubber tires (tyres, they spell it over there) and the car in which we rode was equipped in this way. Never have I been so impressed with the easy-riding qualities of any car as I was with this. We went over roads that were rough enough to toss a man out of an ordinary car. We ran over culverts at twenty miles an hour without inconvenience which with the best of other makes would have compelled us to slow down to a crawl. I haven't the space to go more fully into the details of this car but if the mechanism proves permanent I predict that it will revolutionize automobile construction.

After this Mr. Greenwood took my family and myself through the Federal Parliament buildings where, as Americans, we were shown every courtesy. One thing in particular claimed our atten-

tion—a splendid portrait of George Washington hung in the library. We were much impressed with the magnificence of everything and if space permitted I should like to tell of some of it. One thing we missed was the mace, which had somehow been surreptitiously removed from the House, and was no longer in use. There are various theories in explanation of the removal of the mace, one is that the present party in power being a labor government, it is not in consonance with their principles to use anything so formal as a mace. Another theory is less creditable than this and need not here be mentioned. In any event the mace is missing and parliament must



Central Railway Station, Melbourne.

struggle along in its opening exercises without it. Speaking of the mace reminds me that I saw a most beautiful and ornamental one later in the House of Parliament in New Zealand.

Mr. Greenwood also took us through the Council Chambers of the city of Melbourne and we saw the Lord Mayor's room and just off this a beautiful boudoir for the Lady Mayoress. Australia provides sumptuously for her officials.

After visting the various other places of interest we went to the head offices of the Victorian Railway System, and here I was compelled to revise some of my acquired prejudice against government

railroads. At Melbourne the railway commission is doing something for the welfare of the employes that might well be copied by every railroad in the world. They have reading rooms, an extensive library, both circulating and reference, a gymnasium, a class-room for instruction on all topics of interest to railroad men, such as telegraphing, etc., a lecture hall and a theater. Everything is most complete and worthy of all commendation. How they manage to give so little practical comfort to the traveling public in view of all this is beyond my comprehension.

After luncheon Mr. Greenwood said, "Now, Doctor, if you remain in town till train time you will be chased every minute, so I am going to take you all out in the country for a motor ride to a beautiful spot where you can rest and have some tea," Eating again, you see. But the idea of a motor trip in the country caught me, even if I did have to eat some more, so away we went for a glorious spin. On the way out we passed a cemetery and visited one of the most unique tombs we had ever seen. It had been erected to the memory of a woman by her husband, and was rich in the extreme. A marble figure of the beloved one lay as if asleep and bending over her were marble figures of angels. All kinds of appropriate inscriptions were carved about the tomb and the whole enclosed in a glass case. It was most artistic and impressive. She was born Jan. 26, 1867, married on Jan. 26, 1887, and died on Jan. 26, in 1897.

By the time we reached our destination where we were to have tea it began to rain, but even with this handicap Mr. Greenwood took me out in a field to demonstrate how to throw a boomerang. He made some wonderful throws, the last one going over the house, circling around twice and coming back into the field and nearly taking the ear off a cow. By this time the watch was creeping around dangerously close to train time, and we started for town in a hurry. Did you ever see it fail when you were pressed for time? The slippery roads made fast running hazardous and then we noticed a slit in one of the casings more than six inches long which threatened every moment to blow out. To cap all the gasolene pressure (they call it petrol over there) kept going down and this necessitated stopping every little while to pump it up. I watched that clock on the car, and looked longingly toward the city, and then listened apprehensively for a blow-out. I had important engagements in Sydney the next day, in fact had promised to address three different organizations and it was imperative to catch that train. When we were

five miles out we had less than twenty minutes to go to the hotel, get our hand luggage and make the train. That chauffeur was a corker. He said not a word but sat at the wheel like a race driver, watched every opening, dodged down back streets, looked out the corner of his eye for policemen, and shot us up to the hotel like a bullet. I landed with three leaps into the corridor. "Go on, Doctor," yelled the door man, "Your luggage is all down to the train. You've only two minutes and you'll never make it." The Mater sang out to him, "You don't know a Chicago crowd—we'll catch that train all right." It was nip and tuck, but as we swung up to the station the head



Collins Street, Melbourne, Looking East from Market Street.

porter of the hotel stood there ready to help us out and said quietly, "All right, Doctor, you've plenty of time. It is half a minute before the train starts." I could have hugged that porter. And here let me record a word of appreciation of the management of Menzies Hotel. I have never seen anything more perfect. From the manager down they all seemed to devote themselves to the comfort of their guests, and if it had not been for their foresight in attending to our luggage we should surely have missed the train. I should like some day when they get heat throughout that hotel and running water in the rooms to go there again and enjoy the superior service they give you.

When we reached the platform gate we found a line of our

friends who had come down to see us off on both sides of the path leading to the door of the parlor car, and it was "Good by," "Good by," "God bless you" as we hustled toward the train. When the guard stopped to examine our tickets the parlor car man cried out. "Never mind the tickets, lift them on the car: Don't you see the train is moving." So we were bundled promiscuously into the car amid a shower of bouquets, and the train whizzed away. The last thing we heard was a lusty "Hip, hip, hurrah!" from the dear fellows on the station platform as the train pulled out.

Never shall I forget my visit to Melbourne. The infinite kindness of every one was most affecting. I wish I could mention the names of all those who devoted themselves so unselfishly to our interests, but it would make too long a list. In addition to those already mentioned I must speak of Mr. Ernest Joske, the secretary of the Australian College of Dentistry, who after all the kindness he showed me in Melbourne, remembered me with a cable at Wellington, N. Z., wishing me *bon voyage*, on the occasion of my sailing for America. Then there was Mr. Alfred Pincott, who presented me with some quartz spear heads made by the Blacks of Australia and used by them in warfare and the chase, and some rare specimens of fossilized shark's teeth which are found in the cliffs at Beaumaris, a seaside resort on the shores of Hobson's Bay, and also at Wannon Falls, about 100 miles inland from the sea. It is stated that these are the only places in the world where they are to be found except in some parts of South America. I naturally prize these specimens most highly. Then there was my friend Dr. Yule who brought down to the train a beautiful bouquet tied with our college colors, and Dr. Shuttleworth whom I had met in America, and dozens of other splendid men. Dr. Wm. L. Aitken, who had entertained me at the Savage Club, promised to secure some good specimens of boomerangs for me, and after my arrival home he sent me four which had been made by the Blacks on their reserve at Coranderrick Station in Victoria. They are unique and well worth a place in any man's collection. On the train I met Mr. F. M. Miller of Melbourne, who had been prevented by stress of circumstances from seeing much of me while there, and so had concluded to go to Sydney with me to have a visit. I found the most charming courtesy everywhere and shall remember Melbourne as long as I remember anything.

C. N. J.

(To be continued.)

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

Use White Silk Tape:—To hold the platinum matrix in place when burnishing use white silk tape. This once used will generally replace any other materials used for the purpose.—*Elmer S. Best, D. D. S., Minneapolis.*

Use Dental Lac and Spence Metal:—In making the tooth models for jacket crowns if Dental Lac is used for impression and Spence Metal used to pour the models, beautiful results will be obtained.—*Elmer S. Best, D. D. S., Minneapolis.*

The Need of Occlusal Rests:—In all forms of removable bridge work or partial dentures, where clasps are used, however, some form of occlusal rest is necessary as a means of providing against subsequent settlement of the case. If this precaution is not observed, complete loss of occlusion and usefulness will soon follow.—*Hart J. Goslee, D. D. S., Chicago.*

A Valuable Use of Bitter Orange Oil:—Get a small bottle of Oil of Bitter Orange and occasionally place three drops in the tubing of your gas outfit or on the gauge of your Somnoforme inhaler. It positively removes all objectionable odor, and leaves a very pleasant odor. A few drops, 3 or 4, on an ether mask and the patient scarcely can smell the ether. It is the best thing yet brought out for this purpose.—*H. B. Clark, D. D. S., St. Paul, Minn.*

Boil Your Instruments:—Many dentists do not boil instruments and especially forceps, because they do not like to wait for them to cool before handling. It was suggested to me by a surgeon that for our work it was permissible to cool instruments in tap water, or under the faucet, after boiling, and this seems to me to be reasonable. I offer it in hopes that some one who neglects to boil his instruments (the only recognized safe way of protection

for patients) may be induced to do so.—*Henry B. Clark, St. Paul, Minn.*

How to Get a Good Fitting Plate:—Experience has taught that with good methods and careful manipulation, the old fashioned horseshoe-shaped suction chamber and the newer-idea suction cup are decidedly unnecessary. But as a precaution to rapid alveolar absorption and slight assistance to the inexperienced patient it is well to make what might be called a relief extending over the whole palate of the plate and overlapping the palatine border of the alveolar ridge. This is accomplished by burnishing one thickness of tea-lead on the model after the flask has been cleaned ready for packing. A double thickness covering the hard portion of the palate along the median line is advisable in a case of that character. The impression should not be scraped. The rugae should be saved and carried to the lingual surface of the plate as prominently as possible.—*Irvin B. Carolus, D. D. S., Sterling, Ill.*

Novocain is Preferable to Cocain:—The toxicity of novocain is about two to six times less than cocain; it does not irritate in the slightest degree when injected, consequently no pain is felt from its injection per se; it is soluble in its own weight of water; it will combine with adrenalin in any proportion without interfering with the physiological action of the latter, and it will be readily absorbed by the mucous membrane. The studies of Biberfeld and Braun brought to light another extremely interesting factor concerning the novocain-adrenalin combination. Both experimenters, working independently of each other, observed that the adrenalin anemia on the one hand, and the novocain anesthesia on the other hand were markedly increased in their total effects upon the tissues. Consequently, a small quantity of this most happy combination is required to produce the same therapeutic effect as a large dose of each individual drug alone would produce when injected separately. The injection of a solution of the combined drugs is precisely confined to the injected area, general effects are, therefore, rarely produced.—*Hermann Prinz, M. D., D. D. S., St. Louis.*

Some Precautions to be Taken in the Use of Cements:—Never use anything but a perfectly clean glass slab to mix upon.

Never dip an instrument into the powder, pour it out on the slab. Never dip an instrument into the liquid. Always pour the liquid from the bottle in which you buy it into a glass container having a glass telescoping top instead of a cork. The S. S. White office preparation bottle No. 6 is suitable for this purpose. Then have a short glass rod that will go into the bottle and allow the cover to go on over it. This is used to dip out the liquid and when not in use should always remain in the bottle. In this way no foreign matter need ever come in contact with the liquid. This method of keeping and handling the liquid will also prevent any possibility of crystallization, which so frequently occurs when liquid is used from the bottle in which it is purchased. Particles left around the cork when using become crystallized on exposure, and when the cork is removed for subsequent use these crystals drop into the bottle and start crystallization of the entire mass, or in other ways alter its composition so as to make it unfit for use.—*Geo. Poundstone, D. D. S., Chicago.*

Aids to Repairing Vulcanite:—To mend a vulcanite denture broken in two or more pieces the teaching has been: hold the pieces together, drop on melted wax, chill, invest, separate, remove wax, cut out along line of break, pack, boil, press and bolt. The case is now ready for the vulcanizer and to prepare it has taken considerable time and our time is our money. Now to hold parts in apposition instead of dropping on wax, bore holes with a No. 5 bur on each side of break, opposite each other and at right angles to line of fracture, for partial and full lowers two on each side of break, and for the full upper usually three, two on lingual and one through pink facing, and tie the pieces together with waxed ligature, passing twice through the holes and use the surgeon's knot, making knots on lingual and labial surfaces of plate. Plug holes around ligature with rubber, invest in lower half of flask; when plaster is hard enough cut out along line of break and pack in the vulcanite with a hot spatula, smearing it so margins are sealed, pour other half of flask and when plaster is hard enough case is ready for vulcanizer. The advantages are: Positive apposition of parts; opportunity of determining proper relations because both sides of break are visible; a material saving of time.—*C. E. Bottomley, D. D. S., Burlington, Wis.*

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L. F. Carlin, as of the class of 1912; O. G. Gerner, as of the class of 1912.

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, OCTOBER, 1913.

No. 10

CHRONIC ORAL INFECTIONS ASSOCIATED WITH TEETH; AND THEIR TREATMENT.*

Illustrated with Stereopticon.

BY WM. H. G. LOGAN, M. D., D. D. S., CHICAGO, ILL.

One finds in medical and dental literature during the last twenty-five years the frequent appearance of articles containing the statement that there is a close relationship existing between some chronic oral infections and certain systemic diseases. However, it was not until the appearance of articles by such noted physicians as Drs. Lambert, Hunter, Kenneth Goadby, of Europe; Frank Billings, Wilbur E. Post, D. J. Davis, E. C. Rosenow and Charles Mayo of America, that the entire membership of our profession realized the seriousness of the relation that exists between chronic oral infections and systemic disease.

Accepting as we must the contents of these articles as declaration beyond scientific dispute, the dental and medical profession is confronted with the necessity of developing a better working knowledge of not only how to prevent, but how best to treat such frequently occurring chronic conditions as septic pulpitis, putrescence of the pulp, chronic dento-alveolar abscess and pyorrhea alveolaris.

However, this paper by request will in the main be confined to the diagnosis and treatment of the various types of chronic dento-alveolar abscesses and the prognosis of pyorrhea alveolaris (so called). The effort will be made to outline what course of treatment is best suited to control the usual resultant conditions found present when a patient presents with a chronic dento alveolar abscess, with varied degrees of destruction in the supporting

*Read before the Illinois State Dental Society, May, 1913.

structures about the root ends. The indications and limitations for root end amputations and the demands for extraction. A brief review of the effects resulting from leaving teeth in the mouth diseased with the condition spoken of by the profession as pyorrhea alveolaris, with a statement of when it is wise to extract rather than to treat teeth involved with this chronic suppurative process.

DIAGNOSIS AND TREATMENT OF CHRONIC DENTO-ALVEOLAR ABSCESS.

The presence of a chronic dento-alveolar abscess is easily diagnosed in those instances where we can locate the orifice of a discharging sinus that leads to the periapical field where the initial acute suppurative process had its origin. However, in those cases where the orifice of the sinus is so located that one cannot with a probe determine what tooth is involved, and an x-ray is not to be easily secured, all suspected teeth should be tested for pulp vitality with the Faradic current as outlined by Prinz; or by placing the rubber dam about one tooth at a time and applying hot base plate gutta percha or a heated instrument on the labial or buccal surface of these suspected teeth. The importance of positively ascertaining about what tooth the abscess had its origin has been brought to my attention by the frequent presenting of patients for whom a normal root canal had been opened or the wrong tooth extracted. As an example of this type of mistake, we will review the case of Miss H. G., aged 24 years, presenting with a history of a discharging sinus for the past three years.

The orifice of the sinus was located on the labial surface just in front and a little below the end of the root of the upper right lateral incisor. The tooth contained a root filling which was removed to treat the dento-alveolar abscess supposed to be about this tooth. After a number of fruitless efforts to establish the sinus by carrying the fluids through the lateral incisor, treatment was taken up by the external opening and continued in the root canal for a brief period. Then the sinus temporarily closed, the root canal was refilled and in the interim the lateral crowned. In a few months the sinus was re-established through the old tract. Unsuccessful efforts were made under nitrous oxid and local anesthesia to control the condition by curettement of the periapical tissues and root amputation. Later the recently crowned lateral was extracted and the socket curetted. The sinus closed for a brief period, then again opened.

At this time the patient was referred and by carefully entering the orifice with a delicate silver probe it was discerned that the tract apparently led to the apex of the right upper cuspid. This tooth and the first bicuspid were then tested for pulp vitality with negative findings. Both centrals under gutta percha heat test gave normal pulp reaction. A radiogram was then taken to verify our diagnosis that the lesion had its origin from the cuspid or bicuspid and not from the lateral; and for the needed additional information for us to more positively determine whether suppuration could probably be controlled by treatment through the root canal, surgical procedure, or extraction. After examining the film, the pulp chamber of the cuspid, with the rubber dam in place, was opened and a dressing of three per cent formalin placed in the middle third of the root canal and retained for twenty-four hours with cement.

At the second sitting the sinus was irrigated with a sterile solution of essential oil water until a considerable amount of the fluid passed through the root canal and out of the orifice of the tract located on the labial tissues in the missing lateral incisor area. I have always thought it better practice to sterilize the contents of the root canals before trying to establish a sinus, because I have

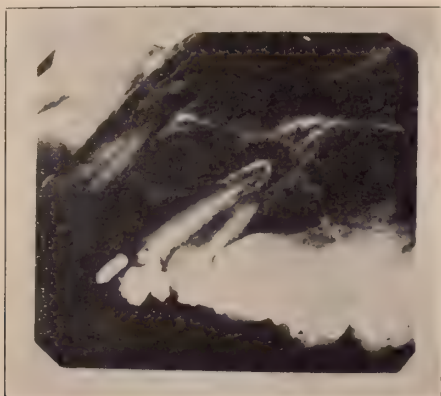


Fig. 1.

As the cuts for this paper were made from lantern slides they are necessarily all negatives. To read them correctly the white should be black and the black white.

seen cases of acute dento-alveolar abscesses resulting from efforts made to immediately irrigate the tract at the first sitting through a putrescent or septic root canal. Having established the tract, it was my custom many years ago to immediately fill the canals, but during

the last twelve years, have delayed this process for at least ten days or two weeks; and in many instances longer, with the thought uppermost in my mind, it was far wiser to give nature this opportunity to close the sinus with new cells, than for me to fill it with any root canal material which was then, or is now generally employed. This case has remained in a healthy condition for seven years, and skiagram No. 1 shows the case immediately after I had filled the root with chloropercha made from Gilbert's stopping.

TREATMENT OF A CHRONIC DENTO-ALVEOLAR ABSCESS WITH A SINUS, WHERE TREATMENT THROUGH THE CANALS, ROOT AMPUTATION OR EXTRACTION IS NOT INDICATED, YET AN OPENING INTO THE PERIAPICAL FIELD THROUGH THE BUCCAL PLATE IS DEMANDED, IF INFECTION IS TO BE CONTROLLED AND THE TOOTH RETAINED.

The treatment of this class of cases is exemplified in slide No. 2, which is of a patient forty-four years of age, presenting with a



Fig. 2.

chronic discharging sinus that was determined by a steel probe to lead to the root end of the second superior bicuspid, carrying a perfect porcelain crown. The skiagram shows a small amount of destruction in the periapical area and the root canal filling not passing quite to the root end. In this case an opening was made by enlarging the sinus through the buccal alveolar plate to a degree that would allow us to sweep a bur over the surface of the root until that portion of the tooth containing the faulty root filling was removed. Then the carious alveolar surface was similarly cared for until healthy tissues were reached. This case has been normal for the last two years. The technic of operation and details of after

treatment should be similar to those outlined under the heading of "Technic and after treatment of root end reduction."



Fig. 3:

Slide No. 3 is of a case with a discharging sinus from a dento-alveolar abscess about the superior left lateral which had continued intermittently for the past four years. Root canal had been once refilled, discharge ceased and an artificial crown placed. In a few months, the sinus was again re-established. Then an effort was made to control the chronic infection by drilling out the carious process, but naturally such a procedure in this instance could not cure the disease, for the good and sufficient reason that the denuded root end was left and the area posterior could not be properly reached with a bur or instruments entering the orifice of the sinus. A view of this case two months after the root was amputated is seen in Slide No. 4, showing the bismuth paste which had been carried into the part for the last time three weeks previous, and also the presence of a perfect root canal filling in the right central which was made by W. H. Dunne, since the first skiagram was taken.

In studying Slide No. 5 one is confronted with the question, to what extent can apices of tooth be exposed by the destructive process following a chronic dento-alveolar abscess with or without a previous history of a cyst forming in this field or one developing subsequent to the initial acute infective process, and yet ex-

pect permanent results to follow root amputations. I believe one will not go far afield who confines root end amputations for the control of chronic infections complicated or uncomplicated with

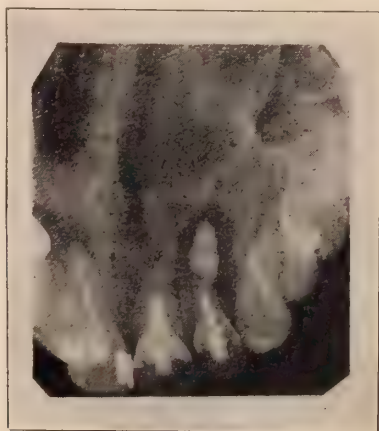


Fig. 4.

cyst formation, to the ten superior anterior teeth and now and then to the buccal roots of the superior molars and in rare in-

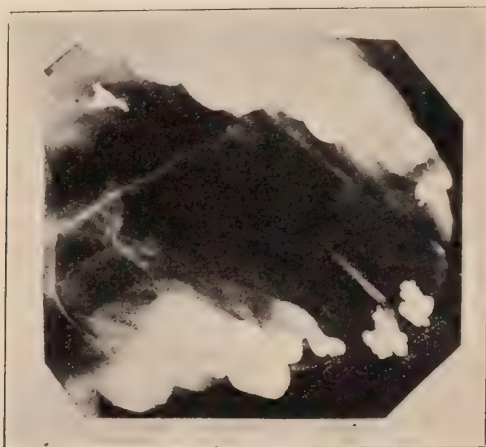


Fig. 5.

stances to the anterior six inferior teeth, providing the tooth in question has not more than two-fifths of the apical pericemental attachment destroyed and the adjacent bone and alveolar loss in every

direction from the root end is less rather than more than one-third the length of the root which is to have the end amputated. Therefore the essayist would say that root end amputation was indicated in the case depicted in Slide No. 5, now upon the screen.

When one-half of the root of a tooth, or roots of a number of teeth are standing denuded and extensive bone loss is present, even to a less degree than shown in Slides Nos. 6 and 7 and the cavity lined with a cystic membrane extending as it did in this case from



Fig. 6.



Fig. 7.

the left superior incisor to the first molar, and partial absorption of the bone forming the anterior wall of the antrum has occurred, the lateral cuspid and both bicuspid should and have been extracted. The demand for the removal of the second bicuspid was occasioned, in spite of the fact that normal attachment still existed about the immediate apex and entire distal surface, because I found when operating that the mesial and lingual surfaces of this tooth were devoid of pericemental attachment for over one-half of its length just below the apex. I believe this extensive alveolar and bone destruction had its origin in a cyst which later became infected by the development of an acute dento-alveolar abscess which had its origin in the pulp of the lateral incisor. The degenerating cystic membrane lining the entire cavity from central to molar was peeled out of the bone cavity in one piece, and a section of it which is devoid of epithelial cells is shown in Slide No. 8.

The lack of a full appreciation of the pathologic findings pre-

sented in various cases of destructive processes occurring in the jaws about root ends has resulted in the amputation of many roots where extraction was indicated and in other instances extraction had been

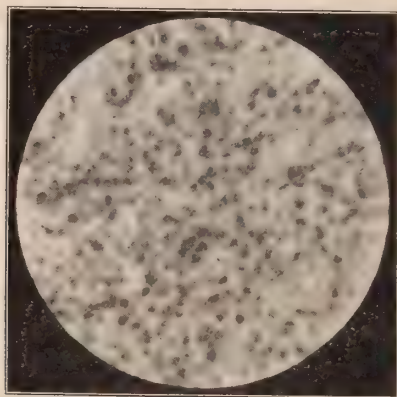


Fig. 8.

advised when a tooth could have been saved by root amputation. And, many of these teeth have been needlessly lost after the amputation had been properly performed because the operator had overlooked the presence of the remnants of a cyst which may pre-

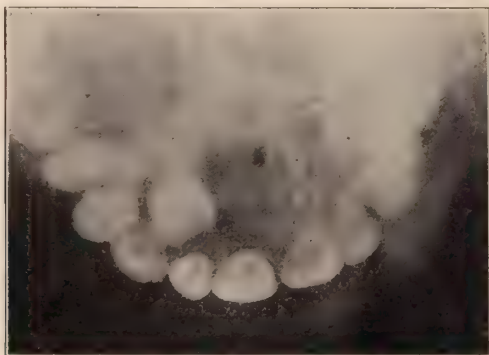


Fig. 9.

cede as well as follow the chronic dento-alveolar abscess. This last statement is made with a full appreciation of the idea held by many, that those cysts found about teeth involved with a chronic dento-alveolar abscess, always follow and never precede the chronic infective process in the periapical tissues.

The presence of a cyst is shown in Slide No. 9 involving the tissue between the lateral and cuspid some distance from the apex and as I will prove by a later slide it can by its characteristic gradual growth occurring without pain, ultimately cause absorption of bone, alveolar process and pericemental tissue about root ends. When cysts approach root ends, the pulps in some instances will die as result of this circulatory disturbance and degeneration of these tissues be hastened by a septic or putrefactive process if dry gangrene does not occur, providing the pyogenic or saprophytic bacteria have gained access by circulation to the pulp or through con-

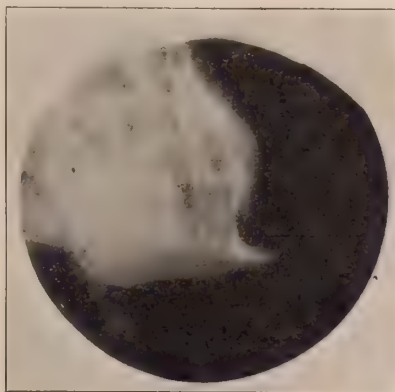


Fig. 10.

genital or acquired defects of enamel and dentin. When putrefaction or septic invasion of the pulp becomes active and passes beyond the root canal, the cystic membrane if in close relation to the root, may become involved with the infective process, providing such a cyst was lying in such close proximity as the one shown in Slide No. 10 now upon the screen.

This cyst extended from the right molar forward around the entire facial portion of the mandible to the second bicuspid on the left. In its development which occurred without discomfort, it grew to the degree that gave the patient an appearance of having an abnormally prominent chin. Bone absorption of the entire thickness of the mandible at the symphysis took place in small areas, for upon the removal of the cystic membrane, was able to pass an instrument into a number of small openings through the thin layer

of remaining bone on the lingual surface at either side and above the attachment of the diaphragmatic muscle. The apex and one-third of the labial surface of the roots of the four incisors had their alveolar and pericemental support destroyed. The cuspids and one bicuspid were in a like condition but to a lesser degree. All pulps showed normal vitality except the two incisors. Both of these gave slight reaction, however, the left incisor's pulp vitality was seriously questioned.

To ascertain whether or not our cyst was uncomplicated with an infective process from the teeth, we withdraw some of the cystic

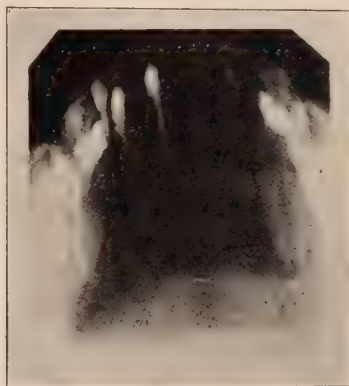


Fig. 11.

fluid and had it placed upon proper culture media. This examination was carried on by Professor Orendorf. No growth was secured, showing our cyst was uncomplicated, however, when we opened into the left incisor a few days after the operation superficial infection of the ulcerative type of septic pulpitis was diagnosed clinically and bacteriologically proven. The condition of this case four years later is seen in Slide No. 10. Therefore, I take it that you will agree with me it is fair to assume that had this case been allowed to go untreated for a much longer period, an acute septic process would have developed in the pulp of this central incisor, which was free from caries; and the cystic membrane that had nothing intervening between it and the root end would have become infected, with the result that at least a part of the epithelial cell lining of the cystic membrane would have been

destroyed. And if the case had been allowed to become chronic with periods of acute exacerbation, a sinus in the labial tissues would probably have resulted through which the pus and cystic fluids would make their escape. The more chronic the infection and the more frequent the occurrence of acute attacks, the more rapid and extensive would be the destruction of epithelial cells, to the end that if the patient had presented at a later time with a sinus, the natural mistake of stating that our extensive bone destruction was the result of a chronic dento-alveolar abscess would have been made.

To prove that functioning cystic membranes are present in

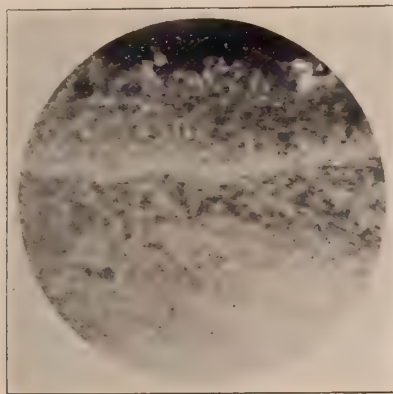


Fig. 12.

some of our chronic alveolar abscess conditions, I call your attention to Slide No. 12, which was made from the tissue lining an apparently uncomplicated dento-alveolar abscess with a sinus extending from the mesial root of a first molar well back under the roots of the second molar. The distal root of the first molar contained a faulty root filling and was standing denuded for one-half of its length in the abscess cavity. This specimen shows the absolute presence of epithelial cells which accounted for the character of discharge found upon examination made immediately following an acute attack. A copious discharge of pus was seen coming through the sinus, but the sticky consistency of the escaping fluid led me to believe we had the presence of a cystic membrane complicating our dento-alveolar abscess. The correctness of the diagnosis is shown in the specimen now upon the screen, for you here

observe epithelial cells lining the membrane removed from the abscess cavity. A similar specimen taken from a similar case with like diagnostic findings about a superior left bicuspid is shown in Slide No. 13. Slide No. 14 was taken from another bone cavity about a right superior lateral. All of these cases had been diagnosed as ordinary chronic dento-alveolar abscesses, because a faulty root canal filling was present, a large area of denuded root was standing in the cavity and a sinus was present in each instance.

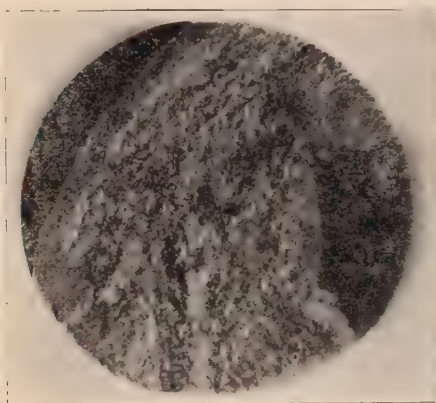


Fig. 13.

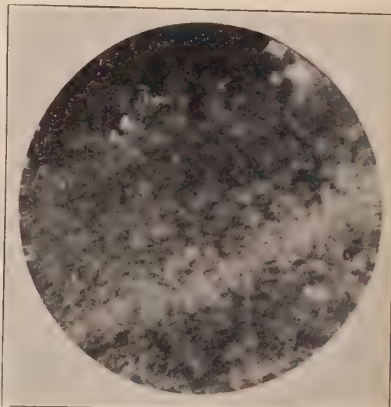


Fig. 14.

DIAGNOSIS OF A CHRONIC DENTO-ALVEOLAR ABSCESS WHEN CYSTIC COMPLICATIONS ARE PRESENT.

From the description of the above cases and the frequent occurrence of many similar ones in practice, I believe there is need for outlining the differential diagnosis between the ordinary chronic dento-alveolar abscess with bone complications, and the chronic dento-alveolar abscess with cystic and bone complications. The point I wish to make most clear is that in many of our chronic infective processes spoken of as dento-alveolar abscesses or bone abscesses about root ends when a considerable amount of periapical tissue has been destroyed, we should keep in mind the possibility of the presence of a cystic membrane in the field before determining what course of treatment is indicated. This can be done by carefully examining the escaping fluids from the sinus or those which enter the root canal during treatment. In those cases where absorp-

tion of the root end has taken place, leaving a slightly or extensively enlarged apical foramen, you have often observed upon removal of the root canal dressing even after two or three treatments, a sudden flooding of this canal with a sticky amber colored fluid, which does not have the appearance of the secretions created by the pus producing bacteria, for the reason that this amber colored fluid is the result of the presence of an epithelial covered fibrous membrane which in part or entirely covers the walls of our bone cavity about the root end. Just so long as these epithelial cells continue to live, just so long will this root canal be flooded every time the treatment is changed.

In the instance of an acute exacerbation of a dento-alveolar abscess complicated with a cystic membrane, upon opening into the tooth for the first time pus will be seen to drain into the canal, but if the cystic membrane is present, after the pus has ceased to flow a tendency to persistent weeping of a sticky amber colored fluid will be made out by the careful observer. In those instances where our dental cyst is small, the epithelial cells which line the entire cystic membrane may degenerate as result of an acute diffuse alveolar infection.

TREATMENT OF A CASE WHERE THE HISTORY AND FINDINGS PROVE
YOU HAVE A DENTO-ALVEOLAR CONDITION COMPLICATED
WITH A CYST.

The only positive method of treatment is to enter the periapical field through the alveolar plate and surgically remove the epithelial covered membrane and amputate the denuded end of the root, providing that it is roughened or has been denuded for a considerable length of time, or to extract the tooth and remove the membrane if it does not come away intact with the root as it sometimes does when the cyst is exceptionally small.

Although the above method is the only one I know of which will give definite results, I have in a few instances successfully coped with this condition where the destruction was but slight, by evacuating the cavity as thoroughly as possible at the second sitting, then introducing phenol 95% through the root canal into the infected epithelial lined cavity beyond the tooth. I would not follow this course of treatment if the bone destruction was much larger than one-half the size of a pea, and if the root end had been long

or extensively denuded or roughened. By keeping the area well filled with 95% phenol for a five minute period, and removing it with alcohol, the epithelial cells will be destroyed in some cases. However, before leaving the question of treating this condition let it be stated that great harm might ensue from the use of 95% phenol in advanced cases of this character. Therefore, you are cautioned against its use except in most favorable conditions. Although many teeth have been filled when the cystic fluid was still weeping into

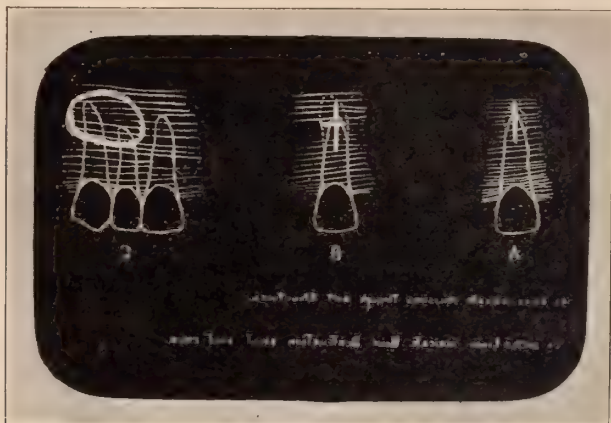


Fig. 15.

the canal and no immediate ill effects seemed to follow, I wish to close this part of the discussion with the statement that he who leaves such a group of epithelial cells in such a location, leaves a condition that under certain irritating conditions may cause the loss of a great portion of the jaw and under more unfavorable conditions the death of the patient may follow by the development of a carcinoma that had its origin in these epithelial cells, that probably came into this field as remnants of the enamel organ.

TECHNIC OF ROOT END REDUCTION AND AMPUTATION.

The terms reduction and amputation are here employed to differentiate the operation of smoothening and reducing the length of a root in variance to the procedure of cutting through the root and removing a portion of it in one piece. When the periapical destruction is as limited as was shown in Slide No. 2 and is illustrated in Figure A in Slide No. 15 now upon the screen, the steps to be

followed are here outlined in their regular order. First—Start a straight incision a few lines above the root end, through the mucous membrane and periosteum and continue it crownwise for one-third to near one-half of its length. Second—Now with a keen periosteotome elevate the tissue from the bone to either side of the incision and beyond the root. Third—Place some one of the various formed retractors made for the purpose into the wound and with it force the soft tissues well back, thus exposing our sinus and any remaining intervening bone and alveolar process overlying the denuded root. Fourth—With the retractor in position let us now and not until now turn our attention to controlling the hemorrhage which slightly interferes with the perfect examination needed to determine to what extent we should enlarge the sinus through the bone to gain perfect access to the root and bone abscess cavity.

The constant pressure caused by either of the self-retaining retractors to be shown later, which are modifications of certain well known mastoid retractors, has a constant beneficial effect upon the reduction of the flow of blood. However, before you start the initial exploration of the abscess cavity pack with gauze or cotton between the edges of the wound with the retractor in position, for a sufficient period to secure practically a dry wound. Such a retractor once properly placed need not be removed until the operation is completed. Fifth—Having for a time controlled the obstructing hemorrhage and the root now in view, pass a sharp steel probe into the abscess cavity through the sinus at the root end and learn to what extent the pericemental attachment is destroyed. When you have positively ascertained to what degree the root is denuded, with cross cut enamel bur or chisel remove the intervening bone and alveolar process if both are present. Care should be exercised in taking away this overlying bone that the cut is not made too far towards the crown, thereby destroying healthy alveolar process with its underlying attached pericemental membrane. If you cautiously enlarge the sinus and make frequent examinations with a steel probe, this often occurring error can be avoided. Sixth—We have now an unobstructed view of the periapical field and if only one-fourth or one-fifth of the immediate end is denuded and there is little periapical tissue involvement, I would not amputate the root because of the difficulties sometimes encountered in removing this small end. The very old and more simple method of root reduction is confined

to this degree and is accomplished by carrying a fissure bur back and forth over the end of the root until it is reduced to the point of normal attachment.

When the destruction and denudation has proceeded to a degree or slightly beyond that represented in Figure B, make a perpendicular incision as in the preceding case, only add a short cross incision at a point just below the root end. This gives us a larger opening through the soft tissue which is needed to care for the case without putting too much tension upon the structures with the retractor. If the destruction is as extensive as shown in Figure C, a circular incision as indicated should be made and a removal of all underlying soft tissue and bone to the root or roots accomplished, leaving a saucer shaped opening about the sides and lower surface. However, by not removing all of the soft tissue and periosteum quite to the upper border of the entrance to the bone cavity, we gain the beneficial effect of having this free flap of tissue drawn into the wound, which is a great aid in getting the cavity to fill rapidly from above downward. In each instance where the soft tissues are retracted and the intervening bone removed the next step, if reduction of the root is not indicated, is to proceed with root amputation at the line of pericemental attachment, and with a strong chisel or hook lift the amputated piece from its bed, dry the field and carefully examine all remaining walls of the cavity for a smooth, glistening surface tissue which has the appearance of mucous membrane and is in reality the remnants of a cystic membrane that we are very liable to find lining some part of many of our alveolar bone abscess cavities. Now carefully curette to healthy tissues in all directions and be sure to remove any fibrous membrane covered with epithelial cells, which may be present. Pack the wound with gauze incorporated with Buckley's euroform paste. Application of this remedy reduces to the minimum the post operative pain. Gauze to remain in twenty-four hours and in those instances where the straight or cross incision has been used Beck's bismuth paste should be injected at the second sitting, after irrigation with normal salt solution and examination of the cavity. If the round incision was made, the packing should be changed daily for five to ten days to stimulate rapid granulation. After this the patient can easily irrigate the part himself. Bismuth paste for the first two cases should be continued twice or three times a week until the cavity is almost filled,

then once in a week to ten days until the incision closes. Until the adoption of Beck's bismuth paste as a therapeutic agent the straight and cross incisions were not successful for root amputations because stagnant fluids were retained and re-infection usually occurred; but with the use of Beck's paste re-infection is the exception rather than the rule, providing root amputation was not undertaken when extraction was demanded. As to who might first have used the various steps here outlined for root amputations, I am not pre-

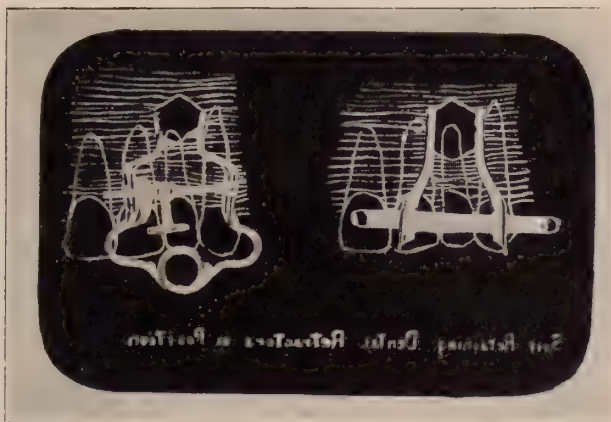


Fig. 16.

pared to state, but I feel sure that it would be safe to assume that these and every other possible method that could have been outlined have been similarly employed by various men in every community where dentistry has been practiced. Slide No. 16 shows the self-retaining dental retractors in position. Personally I favor a one-half to a two per cent solution of novocaine for local anesthesia in preference to cocaine or general anesthesia for this work.

A BRIEF STATEMENT HAVING A BEARING UPON THE DANGERS OF LEAVING IN THE JAWS BROKEN OFF ROOT ENDS, WHICH ARE PARTIALLY COVERED OVER WITH SOFT TISSUE.

The local dangers and systemic effects that often follow persistent chronic dento-aveolar abscesses are not greater than those accompanying the presence of a broken off root, usually covered with gum tissues; for such a root in this environment is a potent cause of oral sepsis and possible general toxemia, rheumatism,

anemia, acute and chronic heart lesions and osteomyelitis of the jaws. As an example of osteomyelitis and necrosis of the mandible resulting from retention of broken off roots. I here present a photograph in Slide No. 17 of a section of jaw removed from Mr.

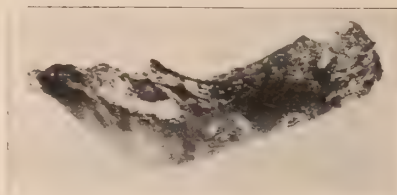


Fig. 17.

Joseph L., age 52 years, whose entrance into the hospital was occasioned by pneumonia. After the crisis had been successfully

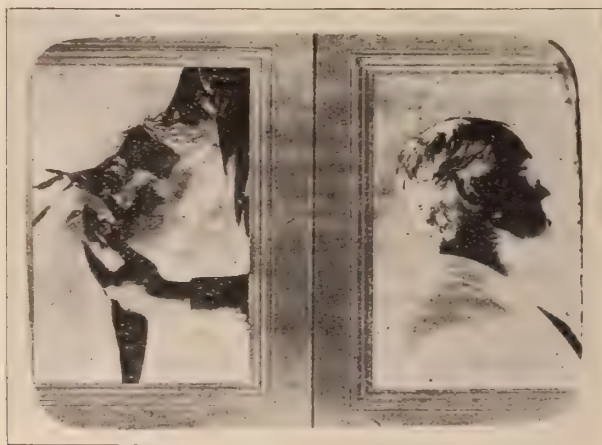


Fig. 18.

passed, general resistance was naturally low and an infectious swelling began along the left buccal and inferior border of the mandible. The physicians in charge examined the mouth and did not find any teeth or roots posterior to the cuspid on the left side. The acute infection not having the cause removed became chronic and many discharging sinuses opened upon the cheek and neck as shown in Slide No. 18, and the condition of the mouth at the time the patient was referred is also seen in this slide, which shows the anterior

portion of the necrosed bone separated from the healthy in a line just posterior to the left central incisor. When I removed this section of the mandible, extending from the neck of the condyle to the central, I found in examining the gross specimen seen in Slide No.



Fig. 19.

19 unmistakable evidence that the initial infection had its origin about the imbedded second molar root fragment which was almost covered with gum tissue. The lesson is that such roots should always be removed when found, for fear of disastrous local and serious systemic effects.

We shall now turn our attention to the discussion of certain phases of the question involved when we are called upon to determine what should be done for teeth that are affected with such chronic infective processes as are termed by the dental profession *pyorrhea alveolaris*.

I believe that we should arrive at some definite conclusion as to the advisability of treating *pyorrhea* teeth, and under what conditions it is advisable to institute treatment and when it is our imperative duty to extract rather than treat these cases. I believe such a discussion is timely, for the reason some prominent general practitioners are contending that this condition after it once gains a foot hold is beyond control; and on the other hand, from some enthusiasts engaged in the treatment of *pyorrhea*, I am led to believe by their oral and written statements that they hold that practically every *pyorrhea* tooth which can be retained without too much discomfort to the patient should be treated in spite of the fact that the life of the tooth, even when placed under a splint, is brief and recurrent periods of infection are liable to follow.

This state of affairs leads me to make the endeavor to answer the question, When should we treat and when should we extract teeth involved with *pyorrhea alveolaris*?

The prognosis of teeth involved with phagedenic pericemental

alveolitis or pyorrhea alveolaris (so called) can in a general way be quite accurately determined after taking into consideration the following important factor: First—Will the patient do her part to maintain a condition of oral cleanliness and return with sufficient

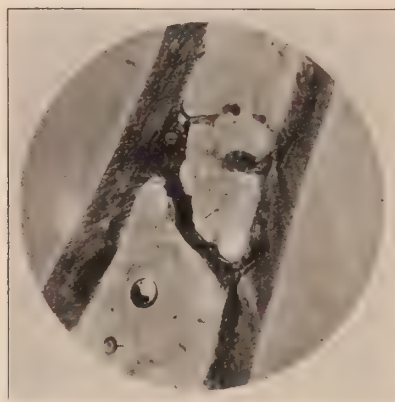


Fig. 20.

frequency for the needed subsequent treatments until the pockets can be filled in by nature? Second—If the patient presents with abnormalities of occlusion or loss of normal contacts and we find crowns and fillings that are having injurious effects upon our remaining supporting structure, and she will not have these rectified, treatment should not be undertaken with the idea of gaining permanent results. Third—Whenever we find a patient presenting with a history of chronic systemic low vitality which was not caused by the oral sepsis, we should be very guarded in our statements in reference to the prognosis, unless we have reason to believe that her general health can be raised to and sustained near the normal. Fourth—Having taken into consideration the above three points, and having decided in favor of treatment in so far as influenced by these conditions, we should now examine carefully the field about the tooth to determine the amount of remaining supporting structure.

I believe the prognosis is good with single rooted teeth when the pocket is confined to the gingival third. The prognosis as here outlined is only fair when the middle third is rather extensively involved at the junction of the apical third. Slide No. 20 shows the normal tissue of the area and accurately outlines the direct blood supply from the pericemental membrane of one tooth through

the alveolar process to the pericemental membrane of the adjacent tooth. It also indicates the great harm that is frequently done by leaving an extensively involved pyorrhea tooth, after we know it is hopelessly diseased. Our imperative duty is to extract every



Fig. 21.

pyorrhea tooth as soon as the prognosis is decided to be hopeless and thus as far as possible prevent the serious systemic effects of such chronic focal infections and the spreading of the disease by continuity through the openings in the alveolar process.

The prognosis is held to be bad or hopeless in practically all cases where less than one-third of the supporting structure remains, and whenever a tooth will sink into its socket pronouncedly as if on a cushion from slight pressure, treatment is not indicated and immediate extraction is called for, in spite of the fact that such a tooth can in exceptional cases be put under a splint and kept comfortable for a long period. A tooth will only act in this way in the absence of an acute inflammation, when we have had the loss of the pericemental fibers radiating across and upward to the alveolar process in the middle third.

The prognosis of teeth with multiple roots having the same amount of supporting structure lost is always more serious and can only be considered fair if the tissues in the bifurcation have been fully involved, and hopeless when the tissues of the middle third

are sufficiently destroyed as to allow the retention of food between these roots, unless we destroy the opportunity for future lodgment of this food. To prevent the necessity of extracting such a tooth in the case of an upper first molar where the attachment is wholly destroyed about the lingual root as shown in Slide No. 21 and the

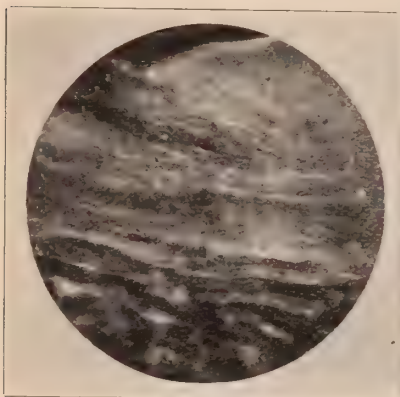


Fig. 22.

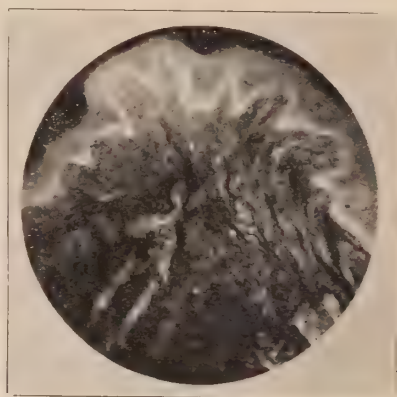


Fig. 23.

In slides Nos. 22 and 23 are shown the tissues in their entirety from a non-inflammatory cyst, at the border of the section slide 22, we find the epithelial cells with an underlying well defined basement membrane, next the layer of connective tissue and beyond a few bone cells, and in slide 23 which is the remaining portion of the section we see the normal mucous membrane common to the soft tissue of the mouth overlying the bone.

remaining tissue is found between the buccal roots, so as not to expose their buccal bifurcation, we can save one-half of the tooth for bridge abutment if needed, by excising the lingual root with all of that portion of crown supported by it. Then give the case a rest for a month or two, if any doubt exists in the mind of the operator as to the future usefulness of the remaining portion, and subsequently reproduce with inlay or crown the lingual contour. In those cases of extensive pyorrhea involvement about one root of the lower first molar, while the attachment about the other root is good, a tooth that is equal in strength to a bicuspid for crown or bridge work can be secured for permanent use by cutting through the body of the crown at the junction of the distal with the mesial root and removing the hopelessly diseased portion. The same method of treatment is indicated if an incurable alveolar abscess is confined to one root of the lower first molar.

The purpose of this paper has been to create if possible a

greater interest in the more exact determination of the character and extent of the chronic destructive processes found involving the supporting structures of the teeth and to urge the members of the medical profession as well as those of the dental profession not to request the removal of a tooth simply because its surrounding tissue has in part been destroyed by such a chronic disease as pyorrhea alveolaris or a dento-alveolar abscess, unless an intelligent reading of the pathologic findings presenting, surely inform us that this tooth cannot be retained and the chronic infection controlled. In other words, let each case be decided upon its merits and in and above it all let us endeavor to be sane.

SOME OBSERVATIONS BEARING UPON THE BUSINESS SIDE OF DENTISTRY.*

BY W. F. WHALEN, D.D.S., PEORIA, ILL.

In selecting this subject for a paper for the consideration of the members of this society, I am not unmindful that it is a most radical departure from time worn precedents; yet I have no apology to make, believing as I do, that the time is ripe when we must give more consideration to this hitherto much neglected phase of the practice of our chosen profession.

That my attitude towards everything that pertains to the scientific, theoretical and practical sides of dentistry may not be misunderstood, permit me at this time to state that anything which I may have to say in this paper should not in any way be considered as disparaging to the many able efforts which have been made along those lines, for I believe after all, that those are the phases upon which more than any thing else the success of our efforts as a profession most depends.

We are living in an age of organization and rapid advancement and no work can be considered well rounded unless it comprehends thoroughly everything which has a bearing, directly or indirectly, upon the fundamentals of that calling.

The ranks of our profession are being continually augmented from every walk of life and from all the races of our most cos-

*Read before the Illinois State Dental Society, May, 1913.

mopolitan society. Inasmuch as the candidates for entrance to our dental colleges are there from personal choice and not by selection of any authorized body as to their special fitness to take up the study of dentistry, it becomes evident to even the most casual observer that certain well defined standards of educational requirements should be adopted by the various state boards and religiously lived up to by the faculties of the colleges to the end that the standard may be the highest consistent with the needs of the public.

In this state, happily it can be said, the board and faculties have for years taken most advanced ground and, while they have met with steady opposition from many sources, have stood steadfast for the highest possible educational requirements, a fact of which the dentists of Illinois have every reason to feel proud; as it has done much to blot the stigma from the fair name of our state of being the dumping ground of the dental profession of America.

I predict that the day is not far distant when we shall have a fair and uniform national standard for entrance qualifications for the study of dentistry, and naturally will follow uniform state requirements for examinations and universal exchange of licenses or reciprocity so called.

All dental colleges have in their curriculum courses of varied length and thoroughness upon dental economics, but as far as I am able to ascertain they deal much in generalities, usually taking high flights in ethical aerial navigation, here and there coming down to earth; but on the whole leaving the prospective candidate for finished dental credentials with rather a vague idea of the real amenities or necessities of the practical conduct of a dental practice.

For years we have been regaled with a lot of high sounding "bunks," voluntarily and most dramatically handed out by many of our most successful practitioners and some allegedly successful ones; that it is beneath the dignity of a professional man to consider the matter of fees, only as a secondary feature; but that far away cry has become threadbare and obsolete until now there is another knocking at the door of ethics for entrance and his name is "Rational business," and gentlemen he will not down; but must be heard and will be.

Conditions have changed and the present time is most opportune, when our profession must arouse itself to the financial exigencies of the conduct of a dental practice and busy itself in putting

its house in order that it may be in a position to better meet the increasing demands of the public.

I refer particularly to the increased cost of living and doing business, also to the rapidly increasing obligations consequent upon the nation-wide propaganda of mouth hygiene. It is not necessary to dwell at any length upon the increased cost of living and conducting a modern dental office. Every practitioner has long since come to realize that both of these items have at least doubled in the past five years, not so however with fees.

The dentists' fees, with but here and there an exception, have undergone no advance and if we are to ever hope for a realization of better than a mere living salary, it is incumbent upon us to take the initiative.

Reform in this direction must be approached conservatively and with due consideration to the rights of the people.

I do not wish to appear before you in the light of demanding unjust and exorbitant fees for our services; but adequate compensation based upon the cost of rendering such service.

This can only be accomplished with fairness and equity by the dentists associated locally going carefully over the conditions governing the practice in their community, and arriving at what they think is a just compensation.

Conditions vary so throughout the state and nation, urban and suburban, as to render any attempt at uniform fees wholly impractical.

To intelligently arrive at what should be adequate compensation for our services we should ascertain what our overhead expense is; to be more definite, we should figure out how much we have invested in our education, what it has cost us together with what we could have earned during the time we were at college, were we engaged in some other pursuit.

To that we should add the cost of our equipment and stock of supplies, the sum total should represent our capital stock and should net us the legal rate of interest.

Having that as a basis we continue with rent, assistant's salary, depreciation charges, lost accounts and customary incidentals, there-to adding such amount as we feel we should have as salary, the latter not to remain stationary, but should be influenced by the same law of reward for service that is recognized in every calling.

The best data which I am able to obtain, leads me to the conclusion, that not to exceed ten per cent of those practicing dentistry are making more than a bare living, and of those, few are making any considerable sum such as would permit them to retire or even ease up when their physical energies are waning so that they are unable to withstand the demands of a living practice.

To my mind the most prolific cause for such conditions is that a vast majority of practitioners get away to a bad business start, due I think to a marked extent, to being improperly and inadequately instructed in the fundamentals governing the financial side of the practice of dentistry.

Realizing fully, as I think I do, that the college course as at present constituted is crowded to the utmost with theory and practice, still to what ends are we working when we continue to send out our young men with little or no knowledge as to what will be expected of them in a financial way. What justice can there be in launching upon the sea of life a set of men, be they ever so well equipped with technical knowledge and skill, but utterly lacking or nearly so, in practical training, and eventually to be wrecked upon the rocks of financial incompetency.

I do not refer to this phase in the spirit of fault finding; but in the hope that it may be productive of some reforms that may assist in bringing about improved business conditions.

The average dentist after he has been practicing eight or ten years finds the grind of his everyday duties rather irksome and suddenly "wakes up" to the fact that while he has been building up a practice, he has saved little or nothing; but has an obsolete equipment and a fine assortment of IOU's for his efforts.

Determining then, as he usually does, that he must get increased fees, if he is ever to get anything ahead, he finds himself confronted with that apparently never ending proposition, the annual influx of embryonic dentists fresh from the fountains of dental knowledge, eager to jump into the maelstrom of professional activities but, sad to relate, just as ignorant of the cost and value of their services as were most of his predecessors, and unless he be possessed of a strong heart and the courage of his convictions, he continues as before, working for a meager salary, himself guaranteeing the collection of the same.

Though we may ever so vehemently declare that we are not

in competition with anyone, nevertheless we must admit that the public draws conclusions by comparison and in as much as its horizon of observation is bounded by certain locally circumscribed limits, said conclusions are productive of much unfavorable comment as to the disparity in fees and office practices leading naturally to estrangements between colleagues who would otherwise be working in the utmost harmony for the best interests of humanity in general and at the same time doing themselves justice.

Time was when every practitioner held as secret his methods of procedure but happily that sentiment no longer prevails, until now we stand as an advanced profession giving and accepting freely of the fountains of professional knowledge, with the primary object that the public may be the best served.

We must not continue longer to delude ourselves into thinking that it is unprofessional to consider remuneration for our services as of vital importance, for while the highest possible ideals of ethics are most earnestly to be desired, and I would not for a moment advocate receding one iota from the magnificent heritage which is ours by virtue of the high mindedness of the leaders of the past and present, yet it is the height of foolishness for us to presume that the public will take seriously any statement upon our part that we have only a secondary care for the financial considerations governing our efforts. I believe it is time that we cut out this "tommyrot" and come out openly and formulate and adopt rational business rules for conducting our practices, demanding sufficient compensation for skillful professional services, thereby gaining for ourselves a position in the community, as business men who not only know the technique of our calling but also know the value of the service we are rendering.

The average dentist is considered in the eyes of business men as a "huge joke" whose knowledge is confined to care for the teeth and who knows practically nothing about business, even his own, not to say any other.

We should bury animosities and petty jealousies and cultivate the spirit of good fellowship. If we will but do these things it will be only a step further towards the accomplishment of one of the most essential things to the perfectly rounded out success of our profession to wit: The placing of it upon a rational business basis.

I refer to the making it possible for the average practitioner

to make not only a living, but in addition to provide a competence such as no fair minded person could deny was his right.

To the attainment of such ends each dental society should have a committee whose duty it should be to formulate rules tending to place the practice of dentistry upon a more uniform basis as regards fees, broken appointments, cash deposits, collections of accounts, rating lists and etc.

Every practitioner should engage as actively as possible in public service work along the lines of oral hygiene.

It is our move and the world awaits our action. Time never was more opportune for the advancement of the propaganda of mouth hygiene.

With our National Mouth Hygiene Association under the National Dental Association well organized and endorsed by the laity as well as by the professions, we would not only be missing a golden opportunity, but also be remiss in our duty to the people were we not to wage unceasingly this warfare on unclean mouths.

It is needless to dwell upon the dangers of communicating disease through lesions and defects of the oral cavity before this or any other dental society, but to know it ourselves is not sufficient.

We must do all we can to spread our knowledge, to the end that we may assist our brothers of the medical profession in bringing about as far as possible ideal conditions of health. Lectures alone, while beneficial, are not far reaching enough, but we must have hygiene staffs whose duty it should be to care for the teeth of the poor, one of the most prolific sources of the spread of disease.

The point may be made that this should be the duty of the city or county and should be paid for out of the funds obtained by taxation the same as support and medical service; however, the initiative lies with us to show the people the great needs and benefits of such service, in the hope that later on public sentiment may be so aroused that ways and means will be devised for properly financing this much needed work. Logically this reform can be best brought about by legislative enactment, state or municipal, enabling boards of health to appropriate a sum sufficient to properly maintain dental clinics for the worthy poor.

Society as at present organized provides no other manner of obtaining such service but by voluntary action on the part of the dental profession.

No class of men is called upon to do more charity work than those of the medical profession, the physician and the dentist, and it is a well recognized law of economics, that in order that we may be in a position to render such service we must first gain the moral and financial support of the people best able to furnish it.

We should put forth every possible effort to obtain general examination of school children's teeth and also provide free lectures on the care of the teeth. Teaching hygiene is much like preaching the gospel, it must be kept at everlastingly, lest what has been done will be lost. If the propaganda of mouth hygiene is ever to be firmly rooted it must be started with the children of the grade schools and followed up consistently. The members of our profession could in no manner better serve their interests as well as those of the public than in volunteering their services in their own communities toward the establishment of free lectures to the school children, for it is during these years that the greatest havoc is wrought in the decay of the teeth and the greatest and most lasting good can be done by inculcating the habit of oral hygiene.

When we have succeeded in placing our business upon such a basis as to insure us a legitimate profit the problem then confronts us as to how to invest our savings.

Of all professional men, I firmly believe that the average dentist is the biggest sucker in the pond.

He is considered as an easy mark and the legitimate prey of every "gold brick" artist. If a collector were to visit the offices of the dentists, and I might include our medical brethren as well, gathering up the stock certificates of worthless oil, mining and other companies what a magnificent display of the lithographic art it would make, and what a story of misplaced confidence and poor judgment it would tell. We are on the lists of every get rich quick concern and are being constantly plied with literature and prospectuses showing us how we can become independently rich by investing in the stock of this, that or the other fake mining, oil or land company.

These bands of pirates, grafters I might more correctly style them, devote their spare time studying out new schemes by which to swindle us out of our meager savings.

Who is there here who is not familiar with the well dressed gent (?) who periodically appears and proceeds to hand out to you that same "old story" about being referred to you as a prominent

man in your profession and community and how anxious his company is to let you in on the ground floor on their splendid proposition. And alas! How often you wake up to find out that there is a basement to the "blamed" thing and as most basements are it is cold and damp and cheerless, and that is where you find yourself.

How inconsistent we are. What would we think of a person who, needing medical or dental attention, would visit a veterinarian or plumber for such service and advice, yet we dentists almost to a man will take the advice of some stranger or often worse still, act upon our own meager judgment and experience in matters pertaining to investments, instead of consulting, as any one of ordinarily good sense would do, some good financial doctor to diagnose and prescribe for us in financial matters.

I note by the stationery of our state society that we have some fifteen committees upon this, that and the other phase of our society work and I grant everyone of them is important; but what we need as much perhaps as any other one thing is a carefully selected committee upon investments whose duty it shall be to warn our members against specific fake schemes and hunt up and furnish upon request, information on good investment. Some states have passed "Blue Sky Laws" and until ours does we have urgent needs of an advisory board along these lines.

Your banker will gladly advise you as to safe investments. How many avail themselves of the opportunity? Nay, nay, we are Johnny Wise. Why should we find need of consulting authorities, are we not authorities on everything ourselves?

Our experiences should answer that question.

The most successful investors consult authorities, why should not the dentist avail himself of the same privilege?

It would be most practical and helpful as well as beneficial were every component society to have annually a lecture by some good investment banker.

In closing I might incidentally mention the cheapness and safety of old line insurance, loan association stock, mortgage bonds, and investments in homes and other income producing properties, being content with a legitimate return for our money, with an eye and a purpose single to the acquisition of a sufficient competency to insure our respectable support in the declining years of our lives and also provide an adequate annuity for our loved ones from whom sooner or later we must part.

A NEW WAY TO PERMANENTLY REPLACE PORCELAIN
FACINGS ON BRIDGES.*

BY DR. W. HIRSCHFELD, PARIS.

Am I right in saying that all our efforts to do solid prosthetic bridge work are paralyzed to a great extent by the little resistance which our present plate-teeth offer to the force of mastication? In other words, no matter how carefully we protect these frail substitutes against their powerful antagonists, even the most skillful, the most conscientious operator will be exposed to fractures of those teeth, otherwise perfectly faultless as far as their construction on pivots and bridges is concerned. These accidents present sometimes such difficulties in the way of repair that all our experience and practical skill will be insufficient to replace these broken facings solidly in the mouth. No doubt, in cases where a good thickness of the exposed gold-frame allows us to establish openings in which the pins of a new tooth can be cemented—and this is the case with the side-teeth of ordinary bridges—we will readily overcome the difficulty. Different are the conditions on permanently fixed porcelain or saddle bridges in general. Here the remaining metal-skeleton offers too little hold for a new plate-tooth to be attached after the ordinary way; it is a case of this nature which has suggested to me a method which for its simplicity and easy manipulation, may appear preferable to all others which we know of.

Before explaining all details of its technique, a short description of the history of the case is indispensable.

Six years ago a lady, artist of the Grand Opera in Paris, consulted me about her front teeth. She wore a small gold plate to replace the missing left lateral and adjoining cuspid, and hoped to have those two teeth fixed after some kind of a permanent system. On examination, found the cuspid root still left, but placed exactly in the center of the free space and in a very bad condition of decay and neglect. The neighboring teeth being perfectly healthy, I told the patient that if I could use the bad root to lodge a strong pivot in, the replacing of the two teeth by means of a small bridge would be quite easy without cutting into sound teeth; moreover,

*Read before the American Dental Society of Europe.

the articulation being favorable, an all porcelain appliance could be taken into consideration. This proposition was carried out to excellent result. After thorough restoration of the root to normal aseptic conditions, a thick platinum iridium pivot was adjusted, fitting snugly the walls of the hollow root, a small platinum saddle soldered to it by means of pure gold, the two plate teeth adjusted fastened likewise with pure gold, a spur added on each side to rest against the joining teeth, everything nicely filled up with prosthetic porcelain and the bridge finally put in place.

After six years of satisfactory wear, the patient came to me last year having fractured the lateral incisor, by biting on a hard bone.

I had now to face the problem of replacing the broken porcelain tooth, without taking out the entire piece. Indeed this bridge was as firm as the day it was inserted and trying to get it out meant sure breaking of this very frail root.

My embarrassment was not small: How could anybody think of fixing a plate tooth on what was left of the pins of the broken porcelain?

There could be no question of using the gold back after the usual fashion—drill holes to let the pins of another tooth pass through, bending those from behind and fasten with cement; since there was no broad backing left on the frame I had to think of a different solution of the problem. Before me I had the two pins of the broken tooth soldered solidly to the platinum base.

It was quite evident that I had to make use of this metal stump in some way or other. The condition of things will be easier understood if you look for a moment at this model. Here you see the two pins sticking out, attached by a piece of pure gold to the saddle. After reflecting the idea struck me to attach a tooth by means of a jacket crown and the realization of this work proved of such satisfaction, that I do not hesitate to submit this method to your appreciation with the hope that you all will try it, in case of a similar situation, which I am sorry to say cannot be spared to any of us.

To make a jacket-crown by means of cast gold, the first condition was to dispose of a solid pivot approaching as near as possible a straight line with sufficient thickness to serve as a solid abutment. So I first bent the two remaining platinum pins straight as you see

it indicated here, then I ground off from the soldering attachment something on both sides and the result was a sort of a post, ready to be used as a solid hold for a new tooth.

After selecting one suitable in shape and color, I first had to find out if the position of the pins would allow the post to come well between; then I cut off part of these, bent the remaining stumps well toward both sides and tried the facing in its future position; here I had to pay attention that the back of the porcelain would not touch the post, but on the contrary, would let a tiny space between. The reason for this will readily appeal to you when you remember that it must be our object to get a solid metal jacket all around. Now I covered the back of my tooth with a thin layer of sticking wax and while soft tried the tooth in position. To model the final jacket ready for casting was a matter of not much difficulty; the only point to pay attention to was to get a well-formed canal to fit the post; there could be no question of reproducing a double slot in which the two pins should fit. It was far more practical to make one single slot for both ends. To do this I simply filled up the space between the pins with temporary gutta percha, put vaseline over all the parts coming in contact with the wax, pressed special inlay wax against the post and after warming the back of the tooth put it into its final position, taking great care that this wax body should fill up every vacant space on the saddle.

Another question presented itself now. Would it be preferable to make the jacket with a slot open at both ends or closed at the articulation? I preferred in my special case to leave both ends open, and this for the following reasons: The post was long enough to present a sufficient hold for cement and force of mastication, but it nearly touched the antagonist; so I thought it would be a better plan to conserve the post in all its length and rather fill up the opening of the slot with amalgam, instead of diminishing its solidity by cutting off sufficiently to have at this end a good thickness of the gold body. However, this does not mean that a slot closed at one end should not be preferable in cases where a good articulation allows sufficient thickness of gold.

After careful casting with 22-karat gold, where great attention was paid to see the investing material ooze well out on both ends of the wax slot, I had the satisfaction to have in my hands a tooth which fitted the case to perfection. To give additional strength for

the holding of it, I enlarged the opening at the articulation quite a good deal, with the intention to lodge in this hollow cup the two ends of the post bent apart. The tooth once cemented in place and while the cement was soft yet, I bent the two ends of the pivot and filled the whole opening with soft amalgam, polished well after 24 hours.

I saw the case again, six months later, which, of course, is no proof of eternal solidity, but it presented every symptom of permanent success.

In conclusion, let me suggest a more general use of this system. You have seen that the only condition for its application is the existence of a strong post. This condition of things will present itself in all cases where plate teeth have been used on a metal saddle, that is to say with pivot teeth of all kinds, incisors, or molars attached to porcelain or metal bridges. In all these cases the essential point is to give the remainder of the metal stump a shape, which in your mind will present sufficient guarantee for future solidity of an all-metal jacket crown. You have seen how easy it is for us to make one, with the help of the casting process and I do not see any serious objection to use this solution in preference to any known method.

THE PROBLEM OF IMMUNITY.*

BY DR. WILLIAM DUNN, FLORENCE, ITALY.

Thousands of years ago, when England was still the land of Barbarians, when America was not even dreamed of, this beautiful land in which we are holding these meetings was inhabited by a most intelligent and highly cultured race, far ahead of the civilization of those times. The Etruscans—bearing on our own sphere we have tangible example of the dental handiwork of those ages; for Etruscan bridge-work is shown to this day in Italian museums, still clinging to the teeth on which it was mounted so many centuries ago.

It would be far beyond the scope of this paper to follow the trend of scientific evolution through the dark ages and prove what

*Read before the American Dental Society of Europe.

a debt the world of knowledge owes the Italians. The compass, the telescope, the microscope, the barometer, electricity and many of its appliances we owe to them.

Painting, sculpture, poetry, music, have their greatest exponents amongst these gifted people; and if the few facts which I beg to lay before you will enable this society to realize that the great genius of the Latin race is even now in the vanguard of biological research, the chief object of this paper will have been achieved.

With reference to the problem of immunity, you were kind enough, at the last meeting of this society to listen to a dissertation of mine upon a kindred subject, and we came to the conclusion that immunity, in a wide sense, is that condition of the body in which disease, though in a potential state, cannot manifest itself.

You may object that this is only true with regard to diseases referable to bacterial infection; but it may be urged, as Sir Almroth Wright very justly points out that it is not possible to conceive disease without bacterial infection.

Only comparatively lately have diseases such as jaundice, asthma, rheumatism been traced to the action of micro-organisms and it is common knowledge (and this regards us very closely) that many cases of endocarditis and other pathological cardiac conditions have been traced directly to infections set up by necrosed roots or pyogenic alveolar diseases. Let me remind my hearers that Dr. Gilmer reports suppurating foci in twenty-five per cent of the mouths he has examined, and that Drs. Rosenow, Davis and Billings relate cases innumerable of the most serious systemic infections from such causes. Lastly, it is only very recently that diseases like rabies, yellow fever, epidemic infantile paralysis (to mention only infections of the human species) till now suspected but not convicted of being of bacterial origin, have yielded up the secret of their specific nature to the ultra microscope, so well and clearly described to us by our able microscopist, Dr. Bödecker.

We are dealing here with the fantastically minute; for these infinitesimal beings to be quite invisible to the most perfect microscope, they must measure less than 0.0014 of a millimeter. They are capable of traversing easily the physical pores of the finest filters. The credit of their discovery is due in great part to Loeffler, of Greifswald.

But though so minute, their infective power is fabulous in degree. It is proved that 0.005 of a cubic millimeter of lymph from an infected animal will establish foot and mouth disease in a healthy calf. Blood taken from fowls suffering from chicken-plague even after being diluted 1,000,000,000 times, is capable of conveying the disease to healthy fowls. One cannot help drawing a parallel between the active properties of these astounding dilutions and the principles underlying homeopathic posology and the doctrines of similars. Such facts as these will enable us to realize what a strenuous fight has to be waged against these practically invisible and practically unlimited foes; and how difficult a task it is to follow nature's workings and wrest from her the secrets of her defences against such insidious hosts.

Now, turning to the process of immunity, you will, I trust, concede that, though most tissues are gifted with certain defensive powers, the immunizing function, biologically speaking, is a special property of that peculiar fluid tissue, the blood. And although immunizing materials must always be present in the blood, the production of these bodies is enormously stimulated by attacks of micro-organisms. In other words, by infection. So that a correlation is established between the cause (infection), and the effect (immunization), the terms of which are in direct ratio to each other. To a slight infection corresponds a slight immunizing reaction on the part of the body. Whilst a grave infection will be followed by a more lasting and a more thorough immunization. This fact is worth bearing in mind, as we shall see later on.

Nature does not develop the same agents to fight different infections but evolves divers immunizing materials according to requirements; invariably, however, fighting similar infecting bodies with similar anti-bodies.

Thus we find diphtheria infection antagonized by diphtheria antitoxin. We have bactericides killing cholera germs, whose dead bodies will be dissolved by bacteriolysines.

Agglutinines and precipitines will come into play in such diseases as typhoid fever.

Again there are more complex battles going on, as for instance in tubercular infection. The bacillus tuberculosis is surrounded (I quote from Metchnikoff) by phagocytes on its entering the organism. These phagocytes imprison it and hinder it in its

growth; after having engulfed the bacillus there comes a fusion of a number of phagocytes, their common action being more efficacious than that of each phagocyte operating by itself. Thus is the giant cell formed, which has played so important a part in the diagnosis of tubercular lesions.

The tubercular bacillus does not submit meekly to its imprisonment. It defends itself by more and more numerous wax-like membranes around itself, which the phagocytes cannot destroy; then comes the closing scene when the giant cell secretes phosphate of lime, calcifies the bacillus and thus entombs it forever.

Besides these substances which act directly on the invading hosts or on their products, we have had revealed to us the presence of subtle "something" which influence the activities of defending cells. Sir Almroth Wright has proved the existence of "opsonines," which will stimulate phagocytes to attack and destroy invading germs which otherwise would remain unchallenged.

This brief insight into the process of immunity will suffice for the purpose of this paper, for it is more with the continuance of immunity that we have to deal.

The power of immunity, as we know, remains with the blood after infection for a longer or a shorter time, to a greater or lesser degree varying from a period of a few days after such slight complaints as colds, to an immunity period of many years, even a lifetime after such grave infections as small pox, cholera, etc., which render the patient who has once conquered them absolutely proof, with very rare exceptions, against further attacks of the same disease.

But modern biologists hold that immunity goes even further than the individual life; that it is handed down as an hereditary endowment to the progeny of the immunized parent. Be it said to the honor of the newer Italian Medical School that it has contributed in no small measure to this scientific doctrine. Professor Sanarelli, of yellow fever fame; Prof. Maragliano who is triumphing over tuberculosis; are the pioneers of the hereditary immunity theory, having against them the French biologists, headed by Landouzy, sturdily upholding the doctrine of hereditary tendencies.

Time alone can prove which is right, but the doctrine of hereditary immunity has many and convincing well established facts to support it.

Orlowski and Wassermann have observed that the blood of children and adults who had never suffered from diphtheria, but who had been in contact with diphtheria patients possesses diphtheria antitoxin to a notable extent. Yet these children and adults had not had any tangible manifestation of diphtheria; they had only suffered from slight sore throat or had even not noticed any trouble of any kind.

So the only possible explanation of the presence of diphtheria antitoxin in the blood of these patients is that of an immunizing response of their systems to direct infection.

When Naegeli published his astounding statistics on tubercular lesions, finding over ninety-nine per cent of tuberculous subjects in civilized communities, it became evident that the human race would long have disappeared from the face of the earth had it not within its powers of gradual and continuous defence against this terrible disease. Thus it became evident that the body will respond by a gentle immunization to a slight infection and that these slight infections, if oft repeated, will induce a degree of immunity gradually obtained, which will baffle attacks of a violent or otherwise fatal nature. This no doubt explains why savage races and anthropoids who lack these infections fall such an easy prey to contagious diseases, which have little or no effect on civilized men.

It is that we all, you, my hearers, and I, are daily, hourly being infected and elaborating within our blood anti-bodies which continually overcome these infections: That we are carrying with us from our birth our hereditary impulses to these antitoxic powers, and that we are working for our offspring, to whom we shall hand down not the hereditary tendency to our diseases but the hereditary immunity against those diseases which we have overcome. Let me cite Maragliano's experiments in 1895; after feeding hens on tubercle bacilli, he found in the eggs laid by these hens marked anti-tubercular substances; and in 1900 Maffucci proved that chickens hatched from such eggs resist experimental tubercular infections much better than those born in similar circumstance from ordinary eggs.

Calmette's classical experiments on calves; the laboratory work of Webb, Williams and Barber prove beyond a doubt that animals which are most susceptible to tuberculosis will be immunized by slight, gradual, and well regulated specific infections.

The most striking example of collective acquired immunity is perhaps given by England. In 1660 Gideon Harvey, describing tuberculosis as a "*morbis anglicus*," mentions that it was as dangerous as small pox and the plague, killing five per cent of the population of England. Now, by the latest statistics, tuberculosis mortality is reduced to 1.17 per thousand, an attenuation which cannot be accounted for by improved hygienic and prophylactic measures alone.

The most puzzling aspect of the problem of immunity is the consideration of the infected individual, of the bacillus bearer from a social point of view. If civilized man cannot escape infection; if the community requires for its welfare slight doses of active bacilli to induce automatic immunity, the bacillus bearer becomes a social benefactor instead of a public nuisance and a danger. Future biologists then will have before them the task of caring for these bacillus bearers, of establishing their degree of utility and of locating them in those parts where their infecting powers will be exploited to the best advantage.

You may well ask: In what way do these theories, of the widest biological bearing, concern us as dentists? They do concern us deeply and very closely. We are the caretakers, and responsible caretakers at that, of the mouth; the cavity in our bodies whence many dangers, hitherto unsuspected, have been proved to enter the system. In this most admirable and perfect incubating chamber it is no exaggeration to say that all, positively all—kinds of micro-organisms, pathogenic and otherwise, find a congenial "*habitat*."

Hitherto it has been war to the knife on the microbe.

Whether cocci, bacilli or spirillae, useful or harmful though they be, the battle cry has been "Kill them, destroy them, annihilate them," and we have used powerful germicides and antiseptics even in the mouth, to obtain this hecatomb.

But if in our very mouths, (laying aside the direct and beneficial action of useful micro-organisms and delicate ferments), we have even pathogenic micro-organisms performing useful functions, slowly infecting underlying tissues, inducing within us autogenic and most salutary immunizations, are we not altogether mistaken in ruthlessly attempting to destroy all and sundry microbes?

We cannot, at the present stage of science, ask bacteriologists to point out which species of parasites are to be cultivated, in what

manner and in what measure, that they may become our friends instead of remaining our deadliest foes. But it will surely be the task of science to determine this.

And since Italian biologists have been amongst the first to boldly take the field in this direction, let the cordial wish go from us to them this day that we may from their untiring efforts reap the benefits of greater enlightenment on this complex and puzzling "Problem of Immunity."

WHY FORMALDEHYD PREPARATIONS ARE CONTRA-
INDICATED IN SEPTIC ROOT CANALS—WITH A
PRACTICAL SCIENTIFIC METHOD FOR
THE TREATMENT OF PUTRES-
CENT PULPS.*

BY CARL J. GROVE, LL. B., PH. G., D. D. S., ST. PAUL, MINN.

For some time past, an attitude of satisfaction regarding the methods of treating septic root canals has been manifested, and as a natural consequence, activity in improving this branch of our profession has been wanting.

The formaldehyd method offered by Dr. Buckley has perhaps served a good purpose. Investigations have however revealed the fact, that the action of this gas is not all that should be desired as a remedy for the correction of these conditions; therefore, the foregoing strictures are not, as some may think, without justification.

After the introduction of formocresol for the treatment of putrescent pulps, I employed the mixture for this purpose for a number of years, not recognizing the deleterious action of formaldehyd. But following some rather serious clinical manifestations which appeared to be produced by the action of this gas, I pursued an investigation which led me to regard the action of formaldehyd with much apprehension.

It is impossible to estimate with precision the injury resulting from the use of these preparations; I feel justified however, in stating, after a careful clinical study, and some investigations concerning the action of formaldehyd, that its effect often results in much harm. If it were impossible to ascertain what action formal-

*Read before the St. Paul Dental Society.

dehyd has upon the tissue its use might be excusable.

In the presentation of the formaldehyd method of treatment, the chemical theory has always received special emphasis, with total disregard for the other influences formaldehyd might exercise. It is concerning these results, that I wish especially to call attention.

Since my views upon this subject have appeared in a recent issue of the *Dental Cosmos*, I wish to present very briefly, my conception of the results obtained by these investigations. I cannot declare that formaldehyd is without therapeutic virtue, but the question which arises is, can it be employed for the treatment of dental diseases without disaster? Although I do not state that disaster will always follow its use, I do believe however, that often a disturbance does result from its use without sufficient external manifestation to disclose to us the resultant pathological condition.

All who have employed formaldehyd preparations for the treatment of septic root canals, have no doubt observed that irritation is frequently produced by this gas; likewise, those who advocate this method, recognize this disturbing element, but maintain that the action is altered by the anodyne properties of the ingredients contained in the mixture. Dr. Buckley states that: "Cresol possesses an anodyne property which modifies the irritating action of formaldehyd!"

To those who have accepted the method upon this supposition, I wish to state that to incorporate cresol with formaldehyd, does not in the least alter the quality of the gas, so far as its deleterious action is concerned, when employed in the pulp chamber. It will of course reduce the percentage of gas introduced, but whenever irritation occurs it must necessarily take place in the vital tissue surrounding the apex, and to obtain such results, the gas must first escape through the apical foramen by volition. Since cresol does not seem to possess this volatile property, and as formaldehyd is not capable of conveying other substances in sufficient quantity to be of any aid as an anodyne, it is quite evident, that formaldehyd reaches the vital tissue in its pure state. However, it should be remembered that an anodyne is to alleviate pain. To reduce the pain caused by the irritation of any remedy, could in no manner alter its destructive properties; therefore, anodynes can hardly be regarded as being of any value in remedies for the treatment of these conditions.

Owing to the texture of the osseous structure surrounding the ends of the roots, these tissues are especially vulnerable to pathological invasion. This fact should always be remembered, and that the employment of substances possessing irritating properties should be avoided, when treating conditions in this region; for it is well known that irritants are often important factors in the production of inflammation.

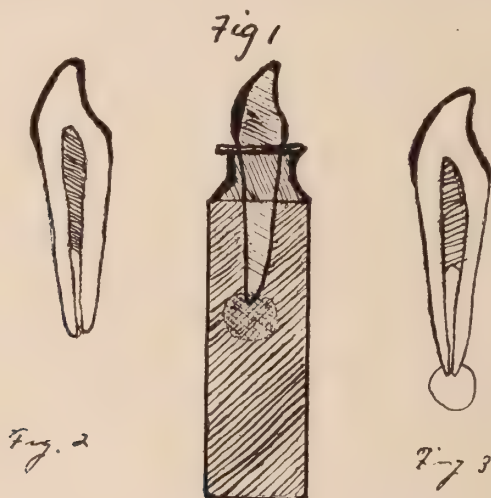


Fig. 1.—Albumin of egg is placed in the bottle. Formaldeol is sealed in the pulp chamber of the tooth. The result is shown at the apex.

The fact that formaldehyd possesses irritating properties, is not the only objection to its use. Following irritation, inflammation often follows, and whenever this occurs there is an exudate thrown out from the effected tissue. This fluid contains a high per cent of albumen, and what results from the action of formaldehyd upon albumen, is shown in the bottle. It becomes an insoluble substance. If formaldehyd is placed in canals containing this extravested fluid, it will at once be transformed to an insoluble mass, closing the root canals, or if the fluid has accumulated at the apex it becomes a source of constant irritation to the tissues in that region as shown in this bottle. Fig. 1.

Contained in this coagulated substance, some formaldehyd undoubtedly exists. We know that formaldehyd is capable of producing inflammation and sloughing. It is hardly necessary for me to mention that very serious conditions might be produced from the existence of this substance at the apex.

If the canals are closed by the coagulated substance, as in the drawing (Fig. 2) it will be impossible to further treat the pathological condition existing in the region of the apex. Formaldehyd will not only coagulate albumen and produce sloughing, but it will also act upon the proteid tissue, converting it into a hard leathery substance, which will also act as a foreign body. It can readily be seen, that the substances produced by these preparations are not conducive to healthy tissue.

Another condition observed during the treatment of putrescent pulps that does not seem to be recognized as being a result of the action of formaldehyd, is the sensitiveness which sometimes exists in these canals, due I believe to the pressure produced upon the coagulated substance in the canals by the broach when it is inserted.

The drawing (Fig. 3) represents my idea of what the condition is. It can be seen that whenever pressure is brought to bear upon the substance in the canal, it exerts a pressure on the vital tissue beyond the apex. I have experimented some with the view of obtaining a substance which would digest this product but have not met with much success.

Some maintain that because pathological conditions do not immediately manifest themselves after the use of these properties, that no serious disturbance occurs, but we know that often abscesses exist for a long period of time without evidence of their presence, and there are similar conditions which I believe often occur as a result of the employment of formaldehyd preparations. Our dental literature has been replete for some time past with clinical data to show that various diseases owe their inception to septic areas at the apices of the roots.

In connection with the investigations which are being made to improve our technique in the filling of root canals, as a means to prevent the formation of abscesses, we might safely consider, I believe, the method of treatment employed before the filling of the roots, as important factors in the production of the abscess at the apices of the roots.

Distinguished men of both the medical and dental professions have at various times endeavored to direct our attention to the importance of obviating these pathological conditions. Since it seems clear that the existence of the abscess in the apical area is a source

of much serious bodily disturbance, and that twenty per cent of our people are thus afflicted, it would hardly seem necessary to enter into a discussion concerning the results occurring from these conditions. Neither would it be necessary for any one to engage extensively in research activity to be convinced of the seriousness of such conditions. Sufficient available material can be found in the private practice of most any dentist to disclose to the most skeptical that this subject should receive the immediate attention of our profession.

The general opinion is that these abscesses are caused by imperfectly filled roots. While it is true that imperfectly filled roots are important factors in their production, I do not believe an opening at the apex will cause an abscess to form. That an opening will afford a suitable place for the decomposition of serum is a fact, but an opening does not cause the serum to leave the tissue.

I believe the two most frequent causes for abscesses occurring after the filling of root canals are, first, as I have already stated, due to the pathological condition which exists before the roots are filled, or possibly there may exist substances of irritation at the apex, which have resulted from the remedies employed previous to the filling of the roots, and the irritation of this foreign body causes the serum to leave the tissue, finding lodgement in the imperfectly filled canals, causing further irritation by the decomposition of this fluid, resulting in the formation of an abscess. And the second cause is due to decomposed pulp tissue remaining in the unfilled portion of the root canals, which thus produces irritation which results in an infection. I am fully convinced the more thorough we are in the removal of these by-products the less likely we are to have these infections take place at the apex of improperly filled roots. We have relied so much upon the remedies employed for the sterilization of the decomposed pulp tissue that we have failed to realize the necessity of a method for the thorough removal of these by-products.

Do not understand from my statement that I am offering an argument for the support of laxity in filling root canals, or that I wish to decry the efforts that are being made to improve our technique in these operations, for I do believe this is a commendable endeavor. I only call attention to this fact to show the necessity of employing a method which will accomplish better results.

The weeping of serum which is so often observed during treatment, is usually due to the use of remedies of an irritating nature; at least this has been my experience. While some authorities do recommend the filling of the roots, regardless of this condition, I believe such a procedure should be discouraged; for when the serum continues to enter the canals, it merely indicates that a pathological condition exists somewhere in the region of the apex. Another reason why I would not fill these roots is because if the roots were not filled to the apex it would allow a place for the lodgement of this fluid without a possibility of absorption after reaching the root canal, and this would also furnish a more suitable place for decomposition, owing to the bacteria which very likely remain in the canals, or in the tooth structure, after pulp decomposition. If all the decomposed tissue could be removed from the canals, and the serum could be prevented from entering, the propagation of bacteria would of course be precluded. We are all aware of the fact that perfect root fillings do not always overcome the occurrence of abscesses. If the serum accumulates in the apical region of a perfectly filled root it would undoubtedly cause a disturbance. I believe that the formation of blind abscesses at the apex of perfectly filled roots can often be attributed to this condition.

Some may feel justified in using formaldehyd on the supposition that a chemical reaction occurs between this gas and the products of pulp decomposition. As I have endeavored to show at a previous writing that the chemical theory is erroneous, I shall not tire you with a review of the subject at this time, but I do wish to prove by a very simple experiment that a chemical reaction between formaldehyd and hydrogen sulphid positively does not take place. Dr. Buckley maintains that free sulphur and methyl alcohol are thus formed. If a chemical reaction does occur between these substances when they are brought together a yellow precipitate, free sulphur, will be suspended in the liquid. As to the formation of methyl alcohol, I wish to state that I have made many careful tests of this solution for alcohol, but not even a trace was ever found. Dr. Buckley never has to my knowledge found alcohol by any chemical test of the solution, but merely assumes it to be formed, because upon the rearrangement of the atoms involved, an equation representing methyl alcohol and the element sulphur

was obtained. As further evidence that alcohol is formed Dr. Buckley states that "upon evaporation of the solution, a substance burns with a blue flame." While this flame does resemble the burning of alcohol, hydrogen sulphid also burns with a blue flame.

Since tests for alcohol have failed to disclose its presence, and as there is a decided odor of formaldehyd evidenced upon the evaporation of the solution I maintain that hydrogen sulphid being only suspended in the liquid is driven off by the application of heat, and that it is this gas which burns when ignited, not methyl alcohol. If formaldehyd was transformed to methyl alcohol, as claimed by Dr. Buckley, there should be no odor of formaldehyd upon evaporation of this solution.

The thought I wish to especially convey in this discussion is that remedies which have properties of producing pathological conditions should not be employed in the treatment of septic root canals, and that the effect resulting from their use should receive due consideration when means for the prevention of blind abscesses are sought.

I shall not bore you with a lengthy presentation of my views regarding the chemical changes involved in the breaking up of the pulp tissue, but as some conception of the final products thus formed is so necessary for treating these conditions intelligently, I wish to mention what I believe are the most important compounds which must be reckoned with in the treatment of putrescent pulps. These are ammonium compounds, carbon dioxid and sulphur compounds.

Some investigators maintain that carbon dioxid is not produced in sufficient quantity to be of any consequence, but when we recall that it is possible for this gas to be formed from the proteid tissue, as well as from the carbohydrate tissue, and that the percentage of elements composing these molecules are greater in carbon and oxygen, which elements make up carbon dioxid, we can safely assume that carbon dioxid is produced in greater quantity than any other gas formed by pulp decomposition.

It is I believe admitted by all who have studied the subject of pulp decomposition that the above mentioned substances are formed by this process. Therefore it is necessary to employ in the remedy used such substances as will unite chemically to change these products. I have selected for the ingredients of this remedy chloral hydrate, thymol and calcium hydrate.

There is undoubtedly a chemical reaction involved in the compounding of this preparation which I do not wish to enter into at this time.

Chloral hydrate has a great affinity for a wide range of ammonium and sulphur compounds, the calcium hydroxid will unite very readily with carbon dioxid, and thymol was chosen for its powerful antiseptic properties.

In preparing this compound equal weights of thymol and chloral hydrate should be taken and triturated, which makes a clear liquid. It will be observed that chlorin is given off; add calcium hydroxid in powder form until the odor of chlorin is overcome, filter, or allow the solution to stand until it is clear, and decant the clear liquid. If a few drops of ethyl alcohol is added to the solution it will prevent crystallization around the mouth of the bottle.

No hesitancy need be entertained about sealing this remedy in the pulp chamber of the most putrescent condition, which can be left with safety for one week or ten days, if preferred. Before placing the remedy in the pulp chamber the rubber dam should always be adjusted, gain free access to the opening of each canal, remove from the mouth of the canal the decomposed portion of the pulp, and place a small piece of cotton saturated with the solution at each opening and seal with cement.

At the second sitting, sodium potassium should be used. It is not necessary for me to enter into the technique involved in the use of sodium and potassium, as Dr. Rhein has at various times called our attention to this method.

These metals decompose the water contained in the tissue to form sodium and potassium hydroxid, liberating hydrogen which ignites when the reaction is violent. This chemical reaction is due to the affinity that these elements have for oxygen. The reaction is always with the evolution of considerable heat, while the heat thus produced may not be sufficient for complete sterilization of the root canals, the action must at least be regarded advantageous. The hydroxid of the above mentioned metals unites with the fats present in the canals to form soluble soaps which should always be washed out with the distilled water.

There are two very important reasons why substances of this nature should be employed for the correction of these conditions. First, because all the decomposed pulp tissue can be chemically

transformed to substances which can easily and thoroughly be removed, which is not possible by mechanical means only. And the second reason is because sterilization is made possible after the removal of these by-products.

If the technique of this operation has been carefully carried out and if the root canals can be completely dried, the filling of the roots may perhaps be done with safety, but I prefer to seal in each canal a mild non-irritating antiseptic, to remain for three days before filling the root; because if inflammation should follow the use of sodium potassium an infiltration of the above mentioned fluid will surely occur at the apex of the affected roots. I would prefer to allow this fluid to drain into the open root canals and become sterile by the antiseptic present, than to have it remain at the apex of a filled root, or escape into the apical end of the root and decompose, if I fail in the attempt to completely fill the root canal.

For the propagation of the bacteria, which might be present in the tooth structure, only a suitable culture medium is wanting, which is furnished by the albuminous fluid resulting from inflammation.

If the accumulation of the fluid could be prevented, or so transformed that the bacteria could not exist in it, and if it could be disposed of by mechanical or chemical means, I believe the per cent of blind abscesses following root fillings would be greatly reduced.

To make the fluid in the canal sterile a remedy which will mix with the exudate must be employed. Very few of the good suitable antiseptics have this property. Cresol is one of the best agents that could be selected for this purpose, if it was miscible with water. It is necessary, therefore, to prepare it in such a manner that it will mix with water, and it must also be diluted to overcome the irritating properties it possesses in this form. If cresol is employed with glycerin to make a ten per cent solution, it will readily mix with the fluid. It must not be forgotten that this product is of an albuminous nature, therefore substances which will coagulate albumin should not be employed in the treatment of these conditions. The cresol preparation will also be found suitable in this respect.

After the use of sodium and potassium I seal this remedy in the root canals, but it should not remain more than three days. I have also found it very satisfactory where there is a slight discharge of pus or a weeping of serum.

At the second sitting, sodium and potassium should again be used to transform the substance which may have accumulated since the last treatment. After this has been accomplished, wash out the canals thoroughly with distilled water, dehydrate with alcohol and hot air. If the canals can be completely dried they should be filled with eucupercha or clora percha and gutta percha points. Pastes containing formaldehyd should never be used.

I do not wish to convey the idea that I am offering remedies which are magical in action, neither do I wish to have you believe that the question under discussion is settled, for there still remains a great deal to be learned regarding this subject. It is with no apology for the remedies I have recommended that I make these statements, for the results are equal to those obtained by formaldehyd, although free from the dangerous properties of the gas.

I trust that no one will gain the impression that I am making an effort to restrain the use of formaldehyd for a personal gain, by placing the remedies I recommend on the market. To avoid such a belief, allow me to state that this is not my purpose, for I am positively opposed to any such practice.

In conclusion I wish to urge that a more careful and thoughtful attention be given the selection of remedies for the treatment of these pathological conditions, and that a better appreciation of the importance of a thorough removal of the products resulting from pulp decomposition, and not to rely upon the supposition that these by-products are always completely sterilized by the remedies employed.

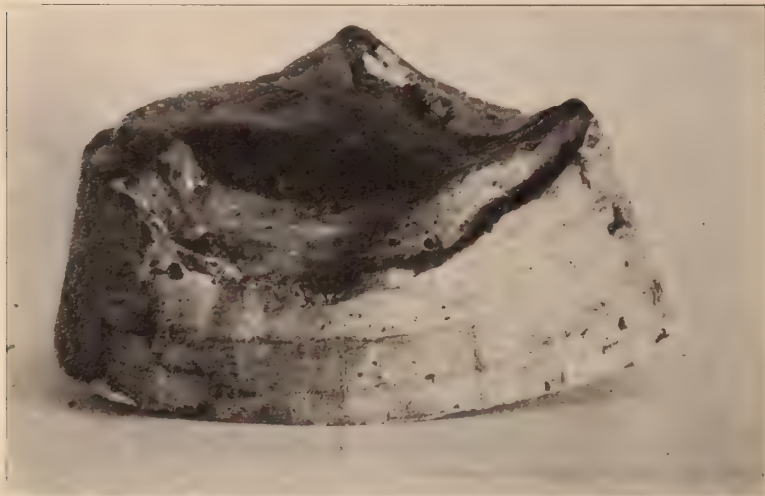
A CASE AND WHAT IT DEMONSTRATED.

BY DR. L. P. HASKELL, CHICAGO.

Twenty-one years ago, a patient was sent to me by a dentist in Montana for an upper denture. He had been salivated years previous and his upper teeth had dropped out. Six dentists had made vulcanite dentures for him, none of which were a success.

The conditions were more unfavorable than I had ever seen. What little ridge remained was flexible. Upon the right side, the necrosed bone had been removed more than an inch long and quite deep. The palatal surface was high and hard as usual. The case did look dubious.

I made my usual "relief" over the hard palate, so the plate would not rest upon it. Placed a slight relief over the hard surface where bone had been removed, as pressure upon the soft yielding ridge would cause plate to bear too hard on that surface.



An aluminum plate was swaged upon a babbitt metal die. Upon trying in the mouth, the adhesive was such I had to use an instrument to remove it.

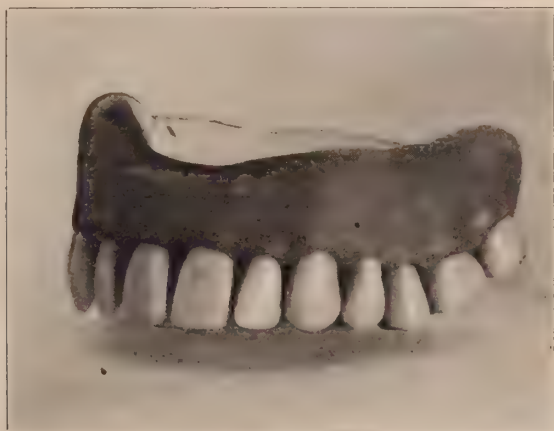
As the patient had a long upper lip, a long bite was needed to restore contour of the mouth. The case was a complete success. I saw him ten years later, and he remarked that he often forgot he wore artificial teeth. Fortunately all but a first molar on the lower jaw were in place, and in fine shape.

After he had left, as I had the dies and articulation, I made a set to keep as a curiosity. Great numbers of dentists have seen it and the model upon which it was made and have marveled at it.

Now comes the sequel. After twenty-one years of successful use, he comes for a new set, the gums had changed somewhat, and his lower teeth had worn down to an extent I had never seen before from the action of artificial teeth. I have just completed the new set. As the posterior lower teeth were so short, I had them crowned. The new teeth were made a little longer than the old ones. He wore them over night, came in the morning, having

eaten his breakfast, and said they could not be improved. The adhesion is very strong.

This case demonstrated that even in flat, unfavorable jaws vacuum cavities and patent holdups are not required; that the



teeth do not need to be set directly over the ridge; that a long bite is not inimical to successful mastication.

The illustrations are the case I made to keep 21 years ago, and the model of the present condition of the jaw. Further, I will say that I have better success with the flat, ridgeless jaws with a swaged metal plate than with vulcanite. I do not make use of the cast aluminum.

THE DOUBLE-BOW CLASP.*

BY F. E. ROACH, D. D. S., CHICAGO, ILL.

The necessity for employing some form of mechanical fixation of partial dentures is very generally recognized, and while the clasp in its various forms has been employed very extensively, and in some cases advantageously and without injury, it has, in the great majority of cases, by injudicious selection of teeth to be clasped, the type of clasp to be used, and improper construction, been the

*Read before the Odontological Society of Chicago, May 6, 1913.

means of unnecessary damage to the remaining natural teeth and their supporting structures.

Believing as I do that the clasp has its place among the many forms of attachments for removable bridge and partial plate construction it will be my purpose in this paper to consider clasp principles in general, and to present to this society what I believe to be a new form of clasp.

First let us study for a moment the common forms of clasps and why they fail to serve the purpose for which they are intended. By far the most common form of clasp used is the plain band or collar clasp made of platinous gold plate, illy fitted around a poor plaster model of the anchor tooth. Another form of the collar clasp is the very accurate fitting clasp made by burnishing platinum foil over a metal model, after which it is reinforced to the required strength by sweating clasp gold over it. Round and half-round wire is also employed to some extent, but I regret to say, not as much as it should be. The basket clasp has a very important place, and while I have made quite a number of them I have never seen one from the hands of another dentist.

In order that the band clasp may be useful for any length of time it must be fitted reasonably accurately and have some positive means for preventing it from settling down and losing its relation to the tooth to which it was fitted. The wide band clasp when fitted around the natural tooth by any method invites decay, but it is more particularly harmful when adjusted without the occlusal lug or some similar means of preventing it from settling.

If the band clasp settles, it not only fails of its purpose but usually causes gingival decay and often gum irritation. By reason of the more rapid and extensive settling of lower partials this condition is more pronounced in these cases.

I am strongly opposed to the use of wide band clasps around the natural teeth under any and all conditions. My preference is for the small round or half-round wire for this purpose. The small wire clasp has many points of advantage over the band form and may be summed up as follows: Greater range of adjustment—longer spring, consequently, more resilient—greater strength for a like amount of material—less liable to cause decay, and more easily kept in surface contact with tooth in cases where occlusal lug is not

feasible. The double bow clasp that I am about to describe is made of platinous gold wire and possesses all the above mentioned good features with the additional advantages of being less conspicuous, occupies less space and the friction that resists dislodgement is in direct opposition to this force.

That we may have good results in the use of any form of clasp it is essential that we select teeth of suitable form and so located in the mouth that they will serve the clasping purpose. And equally essential is accuracy of construction. If the clasp and plate or saddle do not bear a definite and accurate relation neither clasp nor plate will serve its best purpose.

For the greater part of my professional life I have given serious thought to the conservation of the natural teeth when supplying artificial substitutes for those which have been lost.

It has been my practice for many years to supply removable appliances wherever possible and to so construct them that the mutilation of the natural teeth will be minimized and the destructive tendencies of the appliances while being worn, eliminated if possible.

My thought at this time is to call attention to a very prevalent and much neglected condition, and to offer what I believe to be a practical remedy.

The condition I refer to is the small space found in so many mouths due to the loss of one or two teeth. The teeth on both sides of these spaces are very often perfectly sound. If not free from decay entirely their condition does not warrant mutilation to the extent that would be necessary in the construction of a fixed bridge, and for this reason we allow the case to go untouched, assuming at the same time a magnanimous attitude on the grounds that we have sacrificed a fee and saved the patient the ordeal.

Granting that it is not always feasible to replace these missing teeth it is nevertheless practicable to replace the great majority of them very satisfactorily.

It must be admitted that these breaks in the dental arch are of serious consequence and should be given more careful consideration.

You are all familiar with the damages that are the result of these spaces. Loss of normal contact and occlusion is sure to

follow, and when these two conditions exist we may expect more decay, more pyorrhea and more of all the diseases of the oral cavity, or we might say of the entire body.

I am not a calamity howler, but I do believe that we should give more attention to these cases. By stopping the leak in the beginning we may be able to prevent the flood. Any time that it is necessary to extract a single tooth, and its loss means impairment of occlusion and contact, an effort should be made to replace it at once. That these spaces should not exist no one will deny. How best to fill them is the question. As an additional means I desire to present what I will call, for lack of a better name, the double bow clasp.

As already stated, I believe this particular form of clasp is new and possesses features worthy of consideration. It is especially adaptable to the short spaces referred to above.

I am aware that the wire clasp has been used for many years, but its adjustment has been to the buccal and lingual contour rather than to the proximal surface. You will observe that the side of clasp next to the occlusal surface of tooth is soldered to the upright bar which serves as occlusal lug at one end and attachment to saddle at the other. The other side of loop, which extends gingivally, is left free for adjustment to the depression in the tooth just below the contact points.

If you will look for a moment at the normal anatomical form and arrangement of the teeth you will see at a glance the advantage of this form of anchorage. The free sides of loops in the double bow are clasps resting in spring contact with the teeth on each side of the space at a point that is wider than between their contact points and must be considerably compressed before the appliance will be dislodged, and the resistance to dislodgement is increased until this point is reached, whereas the bucco-lingual clasp loses its gripping power immediately upon passing the greatest bucco-lingual diameter, which is nearer the gingiva than is the greater mesio-distal diameter.

The first question that arises in the employment of this mesio-distal spring is whether or not the teeth will be spread apart to such an extent that the space between them will be wider at the contact points than at the gingiva, in which case the mesio-distal spring pressure would be contra-indicated. In some cases this con-

dition may obtain, but I have found that where contact of adjacent teeth is good and occlusion favorable there is no tendency to spread the space. On the other hand, a very stiff spring is sometimes needed to maintain the space. Where the existing forces tend to widen the space it may be necessary to run a spur over between cusps or around the tooth. Frequently the marginal ridge affords a means of anchoring the occlusal lug in a way that will obviate this movement.

If a filling or inlay occupies this proximo occlusal area a small hole for a pin extending from the occlusal lug will securely maintain the proper relation.

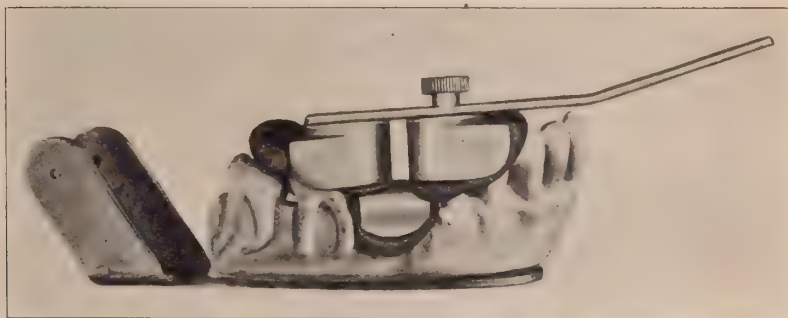


Fig. 1.

I realize that a detailed description of the technic would be tiresome and wholly unnecessary for this audience, but there are a few points that I have worked out that I consider of sufficient importance to mention at this time.

The steps in the procedure are as follows: Take a good bite and impression—make model of modelite, low fusing alloy or cement.

In taking the impression it is very necessary that we secure an accurate imprint of the occlusal, mesial and distal half of tooth on each side of space, also a compressed impression of alveolar ridge. My method, then, in taking impression is to cut a piece of 20-gauge aluminum plate and shape it with pliers to cover the saddle area, and with modeling compound secure a compressed impression of the alveolar ridge only. With this part of the impression held firmly to place I now take impression of the teeth with the special impression tray designed for this purpose.

The advantages of this form of tray are that it is not necessary to break the impression to pieces to withdraw it, and it makes possible a perfect compressed impression of alveolar ridge, which is absolutely essential to the success of these cases.

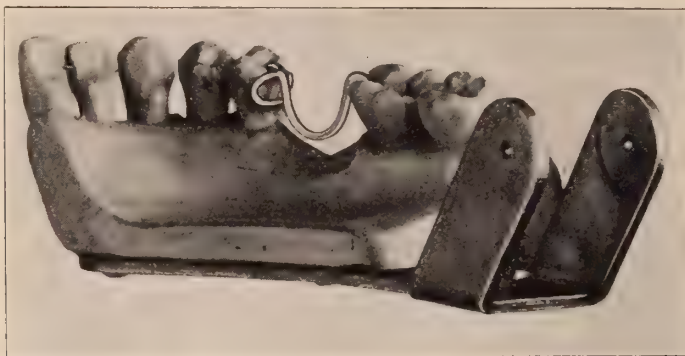


Fig. 2.

For making the model, I prefer either modelite, Ames oxy-phosphate of copper technic cement, reproducing the teeth only



Fig. 3.

with these materials and completing with plaster of paris. A nail or screw should be imbedded in the modelite or cement, leaving the end projecting for secure attachment of plaster, which forms the completed model.

For the clasps, 18 or 19-gauge platinous gold wire round, and 18-gauge square for upright piece, one end of which forms the oc-

clusal lug and the other attachment to the saddle. The ends of the loop are sprung apart and slipped over the square wire, leaving enough projecting to form the occlusal lug, the other end is bent up U shaped and fitted to the other tooth and loop soldered on same as other side, after which the round wire which forms loop is slightly flattened by hammering over the round end of an anvil. This flattening serves the dual purpose of better adaptation and retempering the spring. With the Lane contouring pliers the clasp is now fitted accurately to the tooth and the case finished in any way desirable. One decided advantage in using vulcanite is that the temper is not drawn from the springs as in soldering for gold or porcelain construction. And while fairly good results may be had by burnishing, the full elastic limit of the metal cannot be restored in this way.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, FORTY-NINTH ANNUAL MEETING, MAY 13-16, 1913.

DISCUSSION OF THE PAPER BY DR. LOGAN ON "CHRONIC ORAL INFECTIONS ASSOCIATED WITH TEETH; AND THEIR TREATMENT."

GEO. C. McCANN (Danville, Ill.):

I feel that the discussion of such an excellent paper should be by a general practitioner, but also one familiar with this type of infections and their treatment. Now, if my discussion does one thing, i. e., to encourage a broader practice in this field by all, I will be satisfied. I mean to say, that no man with good judgment should be fearful of practicing upon the lessons of this paper. I venture to say that each man here has had extractions which were heavier and more subsequently serious as to the outcome of the surrounding tissues than would be the outcome of the average apical root excision through the alveolar process. Dr. Logan has outlined a very good mode of procedure. Some may have detail differences in technic. Adopt one method of operation, and when you know and have seen how to do it, as tonight, there should be no fear in getting at the next case that presents itself. Such as chronic abscesses that do not clear up through your canal treatment.

or a root that is carrying a well placed filling or post crown. Both can be handled the easiest and surest in this way.

Now to the importance of this subject. I presume that one could compile hours of reading on histories of these cases. I do not intend to do this, except to recite two personal histories. I give them because I feel that I can give a more detailed history than one can draw from a patient. Also because they are of a type mentioned in this paper, i. e., abscesses causing systemic effects which attain a chronic stage without an outward sinus. Of these I have seen several other similar cases.

In January, 1910, your reader noticed that he was losing a little weight. By the end of January there were days that I seemed exhausted and tired out and lacked the usual ambition. Physician recommended I let up on work, which was heavy at that time. This was done for two weeks, with no apparent change. I felt and expressed that something was working on me some place. In the latter part of February I took up the work at the office, which was doubly heavy at this time. Along with it came the work of the clinic committee for this Society for the Springfield meeting. I mention these accompanying facts to show how a physical and mental strain gives other conditions a chance to act. By the first of March I developed severe night sweats and nearly every afternoon I carried a degree of temperature. I was far from being up to my standard and was now sure that something was working on me some place. The Calmette eye test, also sputum test, was made; both were negative. A blood count was made and a great increase of leucocytes was found, but no finding as to location and cause. Returning from Springfield, I took a ten-day rest. From this I gained some in strength, but the symptoms before mentioned did not clear up. On June first I started on a trip. On June 5th I landed in New York, with one of the severest facial neuralgias one ever experienced. I had a few fillings removed on that side and, not gaining any relief, I resorted to my morphia needle. On June 7th the whole trouble came to the surface, i. e., a blind abscess of the ear and mastoid process. There had never at any time been enough pain in this region to lead to any conclusions; however, after it all had happened I did recall dizziness and twinges, which I thought were due to my general condition. Now, I mention this case because the mastoid is a small cavity and no doubt contains

no more infection than many alveolar abscesses, which, to a patient who is run down will assume great and dangerous proportions. Something may be pulling on the system some place and that some place may be an apparently harmless alveolar abscess or pyorrhea pocket. To cite a case for this statement:

In February, 1912, I had some very similar symptoms as those related in 1910. But the findings came sooner and, much to my surprise, in our own field. In April a very small swelling appeared on the lingual of my upper right bicuspid. This I lanced, with very little effect. There was no pain and after the lingual opening closed no outward conditions. These two bicuspids had been treated twelve years before. From this time on I took more notice of this locality and came to the conclusion that these two teeth lacked bone support and membrane elasticity. They were not loose.

One day in May I decided that more was going on there than was evident, so I bravely pushed a steel bone probe from the buccal into the alveolus. There proved to be very little bone from the buccal aspect. A very few days found me in Chicago, and I had the bone diagnosis confirmed by Dr. Arthur Black. Without discussion, the two bicuspids were removed in a very few minutes. After which I gained rapidly, back to my normal self. Such papers as this one that we are discussing, and findings such as Dr. Mayo has reported, should awaken us to action. We should learn to follow the lines of this excellent paper and bravely drive every drop of infection out of our field.

Having had this personal experience, I was naturally awakened to conditions that occurred in practice. I think of one very distinctly, a Miss B., who was under physician's observation for T. B. She was run down, glandular swelling of the neck, pain frequently got down into the arm and spine. During her T. B. examination she was suffering some facial neuralgia, which brought her under my observation. Examination presented a right central which had been treated for an abscess; a cement filling was still in the cavity. The root canal had cement half way up its length. The apex was slightly tender to touch. Failing to get through canal, I tapped the alveolus. Far back lingually there presented bone destruction with hemorrhage. I did not detect pus.

I was undecided whether to extract or try surgical methods, deciding the latter, feeling extraction could come any time. I proceeded, curetted the pocket, excised the darkened apex of central; swabbed whole with phenol 5 per cent, neutralized with alcohol; packed. Next day I opened to see what damage I had done, as wound looked good I filled with bismuth paste. In three weeks it got well and, to my surprise, robbed the physician of further treatment! Was her trouble located here?

O. L. FRAZEE, D. D. S. (Springfield):

Dr. Logan has drawn pretty well defined lines in regard to the prognosis of pyorrhea alveolaris and if we accept his judgment we have narrowed considerably the field for the specialist in the treatment of this condition and broadened that of prophylaxis.

I have found in the past that the judgment of our essayist has been reliable and am willing to accept in most part the exceptions to treatment which are so definitely given. It would save us great unnecessary trouble down in the country if we live up to it and our patients accept our judgment.

The situation that is submitted to us often is that our would-be patient, who has never cared for her teeth and who has taken a certain amount of pride in their immunity from dental caries and lack of dental care suddenly finds that her pride has brought her trouble in the way of loosened teeth. She presents herself for examination and relief and we find several teeth quite loose and a number of them beyond the stage indicated by our essayist as offering a favorable prognosis.

What is the solution of our dilemma?

Our patient wants to retain the teeth and our judgment is questioned and perhaps our ability, and we also know that those teeth can be kept comfortable and sanitary for a long time if we can enlist our patient's interest sufficiently.

That is especially true if the loosened teeth be confined to the anterior; as they may be splinted or wired as seems practicable, and retained with comfort, if proper prophylactic measures are employed. The essential part of the care must be given by the patient to get results. If they cannot be induced to give them proper care our efforts are in vain and extraction is indicated.

Medication in the mouth, such as anitseptic mouth washes, does

but little good, as the agent is retained but a short time in contact with the tissues to which it is applied.

Mechanical cleanliness with moderate exercise is about the only efficient means to be used in these cases.

I cannot see a reason for abandoning our well tried powders or pastes to assist in the removal of stains and fatty materials which find adherence to and between the teeth.

Gum massage, if properly carried out by the patient, is a great factor in stimulating healthy circulation, also mechanically pressing out foreign material from beneath the gum margin which would otherwise become the nucleus for further accumulation of calculus and infection.

The important feature in these cases and their treatment is the early recognition of the predisposition to the disease in the patients that come under our care for other services, and impressing on them the probable results if proper dental care is not given periodically. This condition is usually indicated in younger people by the slight departure toward a bluish purple color with rather full, loose gum margins. We will usually find some small nodules of calculus present under the free margin between the upper anterior and lingual of lower molars.

We will also usually find a family history of teeth lost by the same cause. The predisposition is there and results will follow as surely as they are neglected.

As regards pyorrhea as a focus of infection. Notwithstanding the essayist's acceptance of the scientific dictum, I am yet inclined to regard pyorrhea as a purely local condition induced by irritation of calculus and other foreign matter which may or may not form pus, which will rarely evacuate in any other direction than toward the gum line.

I will mention one exception in the case of an upper second molar, the root of which penetrated the antrum, producing an infection of that cavity. A number of other teeth in the same mouth have lost one-third of their attachment and yet have remained firm for at least six years. One upper bicuspid denuded to the root end on the buccal, but firmly attached, yet that tooth three years since seemed hopelessly loose.

I can readily conceive that a mouth exuding pus from a num-

ber of teeth can influence health by the contamination of food and saliva and being indirectly absorbed by almost any part of the system, but I am yet to be convinced that pyorrhea pockets directly produce glandular infection except in case of complication with a diseased pulp.

In the tendency of professions to swing from one extreme to another, influenced perhaps by many clinical records, we fellows who are practicing dentistry in all its phases and do not constantly come in contact with scientific workers must reserve our judgment and wait till the facts are threshed out.

Our mission is to save teeth that in our judgment will preserve the mouth in the most perfect condition and extract those that cannot be made efficient.

A few words in regard to chronic dento-alveolar abscess. A greater field is here for focal infection because of the destruction of bony tissue in restricted areas, the pus seeking to find the easier mode of egress from the primary infection.

The bacteria or toxins may be much more readily absorbed by the blood current or lymphatics, carrying infection to any surrounding tissue.

In regard to root end amputation.

The success of such procedure has to me appeared so dubious that the operation in that line has been confined to opening through the fistulous tract, using the cross incision burring or curretting the process to expose the root sufficiently to be able to reach all parts of the diseased area with instruments, then using curved files to reach every surface of the denuded root end and as far as the healthy adhesions would permit, curretting out all diseased tissue possible, then introduce pledget of cotton saturated with phenol, following with H_2O_2 , which will not be objectionable in an open fresh cavity, but will effectively clean out the debris. Dress it daily with wisp of cotton saturated in liquid campho phenique dipped in powder of the same until signs of healing is taking place, one to two weeks, then permit to close.

Am pleased that the essayist has brought out the idea that the weeping tooth canals are caused by cysts. It helps us to understand a condition which has long been a puzzle to some of us.

We have been treating these conditions in an empirical way, but haven't stumbled on the simple explanation.

Have found in those cases mentioned that alcohol forced into the apical area with either a syringe with the point enclosed with temporary stopping or merely pressure with vulcanite rubber over pledget of cotton saturated with alcohol will almost certainly stop the weeping. Alcohol, as we know, will destroy the soft tissues if injected deeply into it, and the presumption is that it destroys the cyst wall and stops the proliferation of epithelial cells.

The cavity left after root amputation will only be filled by a cicatricial tissue, which seems to me to be an insecure "bumper" to resist the force of mastication, and the possibility of smoothing the square end resulting from amputation presents great difficulties; while a root that is left in practically its natural form, though smoothed, will give nature its best opportunity.

DR. FREDERICK B. MOOREHEAD, Chicago:

I shall not attempt to discuss all phases of this paper, but shall speak of two or three items. First of all, the question of cysts. Dr. Logan has over-stated the facts with reference to this formation. If Dr. Logan used the microscope or studied the histology of the structures he would not have confusion in differentiating infective cysts and embryologic cysts. I am sorry he made that statement in his paper because it is not borne out by the facts in the premises. There is great histologic difference between cystic aberrations and so-called infective cysts, each one being separate by itself.

In the next place, he conveyed the impression that the so-called cyst formation was more frequent than it really is in connection with alveolar abscess. There is a definite pathologic entity in the so-called infective cyst, but it is exceedingly rare. I have never seen a case during a somewhat extensive observation. I have never seen a case in which there was an infective cyst, a true cyst in character, which communicated with an external opening. I have seen a few in which there was a communication with the pulp canal, but never in which we could get fluid from the alveolus in the sense we get it from a fistula connected with an alveolar abscess. I do not believe it is so frequent that we have got to be on our guard in finding it.

With reference to extraction, it is an exceedingly fine point to determine whether a tooth shall be removed or not. You cannot make any definite rule for the extraction of teeth, but you can adopt

a principle in practice, and if you will follow that principle you can determine in the individual case as to whether or not a tooth should be removed. A tooth should never be removed that can be made of greater service than an artificial substitute.

A word with reference to amputation, a procedure that is so well established that it scarcely needs amplification at this time. The technic is so definitely established and so well known, and the operation has been done for so many years that every man ought to be familiar with such a procedure, and when it is indicated and when it is not indicated. To go into the details of the indications would require too long a time.

The paper is good, it is splendid, and calls attention to a very vital thing in dental practice. There is one thing we must bear in mind, and that is, the dentist is of necessity placed in a dual capacity in relation to his patients. In this day and generation we are learning so much about biological sciences and their practical application to the practice of dentistry that it behooves every man to be reminded of the fact that there is a vast field in dental practice, to which he must of necessity devote himself, in addition to the mechanical arts and sciences in connection with his practice. The day is coming when the men who practice general dentistry must not only be mechanical dentists, but they must at the same time be able to interpret that large field of things in the world of pathology, and I cannot conceive of anything today which is a more direct challenge to the big men than the newer practice of dentistry.

DR. LOGAN: For the purpose of making the record clear, I would like to have Dr. Moorehead describe the kind of cells in each kind of cyst he spoke about.

DR. MOOREHEAD: In the first place, the infective cyst has definite clinical signs and symptoms, and the epithelial cell is usually a squamous cell, sometimes bordering on the columnar, but is always scant in quantity, usually only a single layer, and many times when these cysts are removed no epithelial cells can be found at all: whereas in the matter of cystic aberrations of the embryonic type a very definite, well-defined epithelial cell is found in the basal structure, with the usual distinct columnar type of epithelium. In one instance we have a membrane which shows a definite connect-

ive tissue formation the result of irritation, round cell infiltration, the stimulation of a deposit of connective tissue, as well as the formation of a new type of connective tissue, the things you will find in scar tissue, definite histologic findings, and a very scant epithelial coating. If you remove one of these cysts and examine a dozen or two dozen slides, you may find no cells. They are taken away in the process of preparation; while in the other type of cystic aberration of an embryonic character you will find a very definite epithelial lining.

DR. LOGAN: The point I wished to bring out was this: that in the first specimen the epithelial cells were destroyed. Later I showed you three specimens, one stratified, and one where the columnar cells are also found, but Dr. Moorehead has said he has not found it. In one of the English books you will find this, and I believe it is Pickerell who says that it is the only one printed in an English book, so that I am not surprised that Dr. Moorehead has not seen it. I showed three slides with a definite history in each case. When I finish the discussion I will show the original type of which Dr. Moorehead spoke. The cyst was taken out with no teeth in the mouth. There was no irritation from the chronic infection, and the three had sinuses, although it is said it does not exist.

DR. JOHN P. BUCKLEY, Chicago:

I rather felt, as I listened to Dr. Logan's paper, that he would have the majority of men here afraid to treat an ordinary chronic dento-alveolar abscess. I do not think he meant to overestimate the number of cysts that are associated with these conditions, but I believe that is the impression he left with the audience. I would not attempt to describe the method of treatment of these various cases. As Dr. Moorehead has said, it is largely a matter of personal equation. Each man has his own little ideas in connection with the treatment or the remedies he uses, and a little different technic, so far as surgery is concerned, but it is the results that count. I know Dr. Logan gets the results. Others perhaps get results by using different remedies and a different technic.

I shall not attempt to discuss the subject further, any more than to congratulate Dr. Logan on the paper, because any paper of this nature involves a great amount of work, and he is entitled

to our thanks and our consideration for the work he has done in connection with it.

DR. LOGAN (closing the discussion): In relation to cysts, I said it was an important thing to always consider the possibility of it. It does not happen often, but the fact that it does happen is a thing that should be kept in mind, and it is your ability to recognize it that makes you successful.

I wish to say in closing the discussion and for the purpose of getting into the record, that the cysts that started with a chronic infection in no way showed a difference between the epithelial cells of that type of cysts, but showed a definite basement membrane that exists in these cysts, and in the two slides I took in the tissue from the cystic membrane to the overlying mucous membrane to show the difference between the epithelial cells upon the mucous membrane and the epithelial cells that lined the cyst. There was no variation in the epithelial cells that lined the cyst where we had a chronic infection. In deference to what Dr. Moorehead has said, we have many layers of epithelial cells, as I showed you in four slides. The epithelial cells, as stated in the paper, and as confirmed by Dr. Moorehead, will be destroyed, but if it is a low grade inflammation without treatment the infection of the epithelial cells will modify the picture. I will show you without further discussion two pictures going straight through tissue of the epithelial cells lining the cyst basement membrane, and then a layer of bone overlying the mucous membrane.

DISCUSSION ON THE PAPER OF DR. WHALEN, "SOME OBSERVATIONS BEARING ON THE BUSINESS SIDE OF DENTISTRY."

DR. C. R. E. KOCH, Chicago:

The subject of the very interesting paper to which we have just listened is one that perhaps has not been considered as frequently and as thoroughly in dental societies as it should have been, but it has been exploited considerably in some of the dental journals, and in ways and methods that do not entirely please one who deplores the evident tendency to destroy all professionalism and higher aspirations by reducing all questions to cold, mercenary commercialism, even to the extent of presenting arguments, not in the tone, and under the methods and with the dignity that

usually accompanies self-respecting professional men, but in the slangy language of commercial venders.

I fully agree with the proposition of the essayist that the business side of any profession must have careful and thoughtful consideration, and careful and tactful administration, but I have no sympathy with the suggestion that progress only consists in the swinging of the pendulum to the extreme eccentric, rather than to have a close and careful adjustment in the pendulum's concentric position.

In the early history of our profession, before we had colleges, and even up to a late date when colleges have been established, dental students came largely through the doors of office preceptorship, where business methods were learned to some extent; but since it is found necessary and desirable that dental students shall be gathered from those who have had a high school education, or better, it has happened to a very large extent that the dental student has come fresh from school without having had the least care about money earning, money saving, or money investing. Dental schools recognized this situation some time ago, and established chairs in which the business side of dentistry is taught. In some schools this has been carried on for more than eight years—not as the essayist says, “as a high flight in ethical aerial navigation, here and there coming down to earth,” but as a practical, everyday, common sense proposition.

I do not believe that our graduates of recent years are the innocent, guileless children of business incompetency that one would infer made up the output of the dental schools. It is true, we hope, that most dental schools are teaching the value of high ethical principles, but why any enlightened man should call this “bunk” is beyond my comprehension. “Bunk,” we suppose, is derived from the word “bunco,” a game for obtaining desired objects by false pretenses. Certainly it does not seem fair to designate moral teaching, or measure it upon such standard, if we expect the world to continue at least as well as it is, if not to make it better. There are undoubtedly those who may designate by this name the great fundamental doctrine of “doing unto others as you would have others do unto you,” and who would with the present day eccentric swinging of the pendulum enunciate this principle by saying, “Do others or others will do you.”

It is our belief that the students, while being instructed in the theory and practice of their profession, should also be impressed with the importance of knowing how to make the knowledge thus gained by them useful for their fellowmen, and through this means productive of a comfortable competence to themselves. Practice building and practice holding are essentials. Practice building requires in the first instance a stock capital consisting of knowledge, skill and judgment to perform the operations, or render the service which a professional man offers to the public. This stock capital should be increased by adding reputation to it, which must be earned from day to day. Details for accomplishing this we cannot go into here, but in this respect as in all others, the personal character enters more largely than we suspect. It is impossible to make rules of action, or rules that shall lead to success, that will be applicable to all, but there are fundamental principles that all must adopt and upon which all must act, and fit them to their peculiar local, social, or other environment, if they would serve the public best and get the best results for themselves. The two interests are one and indivisible. The man who is not in shape to meet his daily obligations and secure proper comforts to those depending upon him, is handicapped in his giving of the best service to those who require it from him.

The matter of keeping exact and correct records of all professional transactions; the matter of correct bookkeeping; the matter of meeting financial obligations promptly; the manner of collecting bills promptly; the method of establishing a basis for fees, are all taught and considered in dental schools of today. Not only this, but the student is also impressed with the necessity of frugal administration of his office and household; the economies that shall secure gain without waste; and finally the duties to society in its social fabric, the home building, the creating and gathering of a surplus, and to know how to care for this, are matters that students are fully impressed with before leaving school. The necessity for securing against accident, fire or other emergencies, and the absolute necessity of covering losses that may thus arise, and also that risk which absolutely must become a loss at some time—life itself—are carefully urged and drilled into the dental student of today.

We do not believe that in estimating the stock capital of the

dentist as outlined by the essayist, the matter of the expense of his education and the cost of living while he was gaining this education, should be considered in the matter of his fees at all, but in the event that this is an item that should be considered, and assuming that the cost of a dental education has amounted to \$3,000, you would find that this item extended at 6 per cent would only amount to \$180 a year, or 50c per day. In most practices a distribution of this amount and a claim to patients that the fees must be charged to take care of this item, to our notion very closely approximates charlatantry and hypocrisy. It is something of the same nature with that of the man who will stand up and tell his patients, who may think that the fee is a little large, that he has used "whale-bone" rubber, or has used a platinum alloy, or a particular preparation of gold foil, when the truth is that whatever difference there may have been in the price of one material employed above another is so small as to make these statements a miserable, cowardly make-shift. It deceives no one and it is not conducive to successful practice building or practice holding.

It is our opinion that the financial success of a dental practice rests almost entirely with the individual. Each must build up his own clientele, and each has the right to establish his own fees without regard to any one's else. The fact cannot be ignored that dental service is largely personal, and must be confined to the working hours and the physical and mental strength of one individual. The individual should in the dental profession, as well as in any other, progress in capacity, in ability and in reputation, and having done this, is entitled to earn more from year to year and collect better fees. If he does not do so, and has not the moral strength to do so, the blame should be upon his own shoulders and not upon any one's else.

We question very much whether the methods of trades unions of getting together and formulating a set price for a specified amount of labor or skill for all alike, and forbidding any one from plying his vocation more than a certain number of hours each day, has been to the greatest advantage to the individuals in these vocations.

We do not believe that among professional men a set agreement to charge so much for a certain partially tangible service

would benefit any one. The highest development in mechanical trades was not reached by the restrictive regulation which constitutes every mechanic theoretically as good as the other, and there is no doubt in our mind that such a process of evolution and fixed compensation for dental services would have a tendency, not to elevate, but to deteriorate the skill of the individual dentist, and the reputation of the dental profession in the eyes of the public.

If there is no increase in the income of a well educated, well trained, competent and skillful dentist from year to year, there is a screw loose in the make-up of the individual, which needs tightening. If he will get himself together and carefully follow the instructions in this respect given in dental schools, he will find that the matter can be remedied and that as the years go his strength will grow and his income should also grow.

There has been much said and sung about the high cost of living. It is our opinion that much of this is a habit of statement which is not warranted by the facts to any great extent. It is true that the cost of high living might be greater than it formerly was, but frugal people are not called upon to spend so very much more for the ordinary comforts of living than they were ten years ago. Professional men can very easily make up whatever of increase there has been in this respect by adding a small amount to the ordinary fees they have been charging, and in that way make up any actual or fictitious loss there has been. If dental services were a commercial commodity the statement that everything has gone up in price excepting dental fees might be warranted. The robber tariff and the greedy trusts are accused of responsibility for this condition in merchandises. These do not apply to dental practice.

If the individual dentist's fees have undergone no advance in his practice of ten years or so, he has wronged himself, and he has wronged those who depend upon him for support, and it is not clear to our mind that he has benefited his patients. We have already called attention to the fact that a dental practice is limited to the time and strength of one individual. The dentist is educated under restrictions of statutes enacted by the people. He is forced by law to submit to an examination of the people's officers

before he is allowed to practice, but while this may be an unpleasant restriction upon him, he on the other hand received an endorsement from the people. He is underwritten, so to speak. He maintains for the people a place to render service, and he is always ready to render service to such as need him. Having only a certain number of hours to sell—if we enter into the commercial aspect of the case—he must so fix his fees for the time that he is called upon to serve as to render him a sufficient income to carry on his overhead expenses, including the depreciation of furniture and fixtures and material employed, and then to have above all these expenses a reasonable compensation for himself, to be used for himself or those dependent upon him.

The simplest way of making a just and equitable fee would be to keep an exact record of time, and as a basis for his fees have a more or less fixed price in his own mind per hour, or fractional part of an hour's service. We see that our essayist suggests that to the cost of his education and the investment of his office he should also add a charge for the money he might have earned had he not taken up the dental course. As a business proposition, this statement does not appeal to us, because if he had done something else for which he would have earned money, he would not have accumulated the skill and knowledge which is given him as a stock capital, that he can never lose and that no one under any circumstances can dispossess him of. We might as well say that Bill Jones went to dental college and fitted himself for the practice of dentistry at an expense of \$4,000. His school chum took another course, went west, located a mine and became a millionaire. Why not charge any amount to the capital stock suggested for the loss sustained by not having gone with his chum and shared in his success. That would be on par with many great corporations in their stock watering propositions.

Whatever the essayist may have said, and justly said, with reference to dental schools having neglected this part of instruction, it does not seem to us that it is a fair criticism of them, but even if it were, we must still come back to the fact that if the practitioners were not properly instructed in respect of their business duties, business obligations and business opportunities, it is high time that each one began to sweep in front of his own door-

yard and better the conditions of his own surroundings, rather than to waste his time and energy in prying around to learn what his neighbors may or may not be doing. It is purely a personal proposition and within the control of the individual. All it needs is determination to render the best possible service and to receive the best possible reward.

If the average dentist, having practiced eight or ten years, finds that he has made no progress, but is in a worse plight financially than when he started, he should not blame the school which failed to instruct him in this particular. He should blame himself for not having had sufficient courage and sufficient ambition to supplement whatever deficiencies he had at the outset.

Dentistry today is not overcrowded. There is plenty of room for the development of each individual. When we consider that there are about 2,800 people to each dentist in this country today, and when we remember that the income of \$2,500 per annum is much greater than the average professional man has, we find that it takes about 90c per capita to support a dentist. There are 550 people to every physician. To secure the same income, therefore, each person must contribute over \$4.50 to the support of each physician. From this it would seem that the dentist has decidedly the best of it. At the present day about as many people require the services of a dentist as those of a physician.

It is not clear to us how there can be any estrangement between professional brethren laboring in the same town, because in the extension of fees for service one is able to receive more than the other. The one who is receiving the smaller fees should be encouraged to earn larger fees by making his services more in demand. The one who has succeeded in establishing and receiving higher value for his services is a beneficiary of the other, and should be so looked upon with gratitude, rather than with envy and hatred. This view of the case is not by any means high-minded or ethereal. It is absolutely a practical, every-day condition, and while what we may now say may be considered in the language of the essayist, as "tommy rot," it is our firm conviction that if our friends who are feeling that they are on the under side of the proposition—receiving less than their neighbors—will abandon the notion of watching their neighbors and devote more

time and energy to the development of their own practices and their own fees, they may safely let others entertain the views they themselves now hold.

It would be a source of grievous disappointment to believe that educated professional men, and especially educated dentists, are "the biggest suckers in the pond." It is true that dentists, unless the individual rises above his narrow surroundings of the operating room or laboratory, are liable to dwarf in many of the opportunities of development, and may become more susceptible to "gold brick" and other artists, but it will take more evidence than a simple statement of this fact by any one, no matter how firmly he may believe in its truth, to convince us that the individual who has chosen the practice of dentistry differs very largely in his make-up of head or heart from his brothers in other vocations. We do not believe that he is more susceptible to the tickling of his vanity than others, and we do believe that the intelligent, educated, painstaking dentist is, and should be, the equal of every other individual of his type in any calling. Please do not let it go out to the world that you have so little respect and esteem for the discretion, judgment and business acumen of your profession that the individuals require an advisory board along these lines.

Summing up, we want to again say that while we are largely at difference with the reasoning of the essayist, we fully agree that dental offices and dental practices should be conducted with the view of business integrity, prudence and discretion, but above all, with a high moral sense of the obligations and duties imposed upon its practitioners by the people, who must receive its services, but who must leave to the dentists the determination of their financial value.

DR. J. D. REID, Pana:

I feel some timidity in discussing this subject after such able discussions as Drs. Hazel and Koch.

It is necessary for us to understand the overhead cost of doing business. The cost in Chicago, Kankakee and Nokomis is so different that the same fees cannot prevail. It is necessary for every expense to enter into one's calculations if he wishes to show a profit. It is said that the net profit of the average dentist, not the gross income, is about \$1,500. Doubtless many of you gave up a

business, a profession or trade that was paying you almost that much. It is not necessarily incumbent upon us to dignify the profession by getting large fees, but more for the excellence of our work, and it is necessary that we live right and do right, and we cannot live right unless we have the wherewithal to live on. My idea of the paper is to get us together. There is nothing like self-interest for getting us together and in good fellowship. The pocketbook strikes us all first. We can talk about higher ethics, but we have got to look out for the pocketbook. If we sign some sort of agreement for a minimum fee, I do not know of any reason why a man should confine himself to that fee, but that simply gives the weaker man in the profession—and there are always weaker men in any trade or profession—the opportunity to know what he can depend upon. If a new man comes into your community and wishes to know something about the fees, you can give him one of the fee bills and he will have some idea of what is to be expected in that community. He may be a good man, but he knows very little about the prevailing fees in that locality, although he may have received the necessary instruction in his college to charge the fees that other men are charging. But the fees are so at variance. If you strike one of the more successful practitioners, his fees are larger. If you strike one of the smaller ones, the fees are necessarily smaller. If there is a minimum fee bill, he has no fear that he will undercharge.

The question has been brought up in the discussion of the amount of fees received from the public at large by physicians and dentists. We had a paper read before our Society not long since, by one of our physicians, who called us all sorts of names because we did not get better fees. Just this week, one of our neighboring dentists had a mishap in his office. There was a death caused by the administration of chloroform. The dentist gets the blame for the death; he gets the notoriety, and probably if the death had not occurred he would have obtained 50c for extracting a tooth. But the physician who gained none of the notoriety would have gotten at least \$5 for the administration of the chloroform. That is some comparison of fees between the dental and the medical profession. A fee bill would stimulate us in many ways and get us together. If the hired girl is willing to pay

\$15 for a hat along about Easter time, and only wear it for three months, she can afford to pay more than \$5 for a crown which will last her many years, so that there is no reason at all why the matter of fees should not be straightened out. I touch on the matter of a \$5 gold crown because we see it advertised in many places. I am not talking about the advertising dentists at this time, but he immediately enters into the case when we talk about the minimum fees, and if all ethical dentists knew that their brothers were not obtaining the prices of advertising men, they would hang more nearly together. One feature to be considered by every man who takes up a minimum fee bill would be the fact that every cent he adds to his fees is net profit; it makes no difference whether he is getting \$5 for a crown or \$10, the overhead cost is the same if he is honest. There are good reasons why we should have better fees now than ten years ago. The cost of equipment in the office is considerably more. Ten years ago you probably had no telephone. The wages of the office girl were small. At that time we used the foot engine or foot lathe. There were no casting machines, no fountain cuspidor, and many other things that we now have to use. The cost when we used the foot engine was about \$50, whereas today we pay \$150 for the electric engine and other items in proportion.

Another matter taken up is the actual cost of constructing plates. There is very little known by the average country dentist, who is doing his own work, as to what it costs to construct a plate. A dental journal recently sent out several thousand inquiries to different dentists and asked them how long it took to make a plate; the average time was about 8 hours and 8 minutes. Twenty-five per cent of the plates must be made over for various reasons with which you are all familiar, which would increase the hours 25 per cent, making the actual average of 10 hours and 8 minutes for every plate put out. The man who is getting something like \$10 or \$15 for a plate is not doing a very lucrative business. At a meeting of a certain district dental society, held February 18 and 19, they reported these facts through their fee and finance committee, who had some business matters to consider: Twenty-eight per cent of dentists invoiced every year; 50 per cent bought supplies in quantities; 41 per cent took advantage of a pos-

sible discount; the average percentage of expense to net cash was 35 per cent plus; the average per cent of expense to gross business was 29 per cent; average collection of gross business, 83 per cent; 87 per cent claim to watch collections carefully; 17 per cent did not mail statements; 89 per cent extracted the teeth of children for less than adults. So it would seem that dentists are poor business men and only by discussion of papers such as Dr. Whalen has written can we become better business men; consequently, I thoroughly endorse everything said and wish we could have more along this line.

Since Dr. Whalen read a paper before the Central Illinois Dental Society this spring, that society has adopted a minimum fee bill. I believe some other societies have done the same thing. It is a good thing. I am convinced of it.

Some of you men may not need it, but more of you do need it, and by adopting a minimum fee bill by each component Society, I am satisfied you will all say,

"This is the way we long have sought,
And mourned because we found it not."

DR. EDMUND NOYES, Chicago:

I am not going to find any fault with this paper especially, but I would like to supplement it a little.

There has been a great deal written and published in the journals in the last few years about the business side of dentistry, and there is much of it that has been excellent, and I have no doubt it has served a very useful purpose to the members of the profession. For the most part, in these publications there has been a lamentable ignoring of any difference in either business or ethical standards between the professions and commercial business, and other lines of business endeavor, and I have been very sorry indeed to see this general tendency apparent in the minds of men to make no distinction between professional and business obligations, and no difference in the conduct of professional business and commercial business. In this day and generation, when we see a strong disposition and tendency in the business world to raise itself up towards high standards, towards the ethical standards of the profession, I do not think it is necessary at all, and I should be very sorry indeed to see any effort on the part of the

profession to go part way to meet them. We do not need to. Our own standards have never been too high.

There was one phrase in the paper which I do not like. He criticised severely and characterized unkindly the statement which professional men sometimes make, and ethical teachers ought always to make, that in professional life the pecuniary compensation is secondary and the service is first. When you say that the remuneration is a secondary consideration, you do not mean that the man is not to have remuneration. You do not mean it at all. You mean that the nature of his service and the needs of those whom he serves are of such a character that any man standing beside another man in need, and remembering the duty to do to others as he would have others do to him, must take this attitude. He cannot help it. A physician is called to a man dying. Can he put the question of his fee first and the service to the dying man second? There is probably not a man in this audience who would say that he could, and yet physicians have done that. When a man, who has possibly spare time, or has an income sufficient that he may possibly spare a little bit of it and still meet the necessary demands upon him, is confronted with a poor girl whose teeth he may preserve for a life of usefulness, or whose teeth he may refuse to take care of and they may consequently go to wreck, he must not for a moment surrender the standard of ethics in his professional life. We must conform our whole business arrangements to it. We must have our standard of compensation such that we have a margin for these things. We must have something left for charitable service. I would not for a moment indicate that I think the dentist's income should be any less than any of these men require that it should be. I simply insist that the standard of compensation be high enough to leave him a good strong margin for work that is done for less than his standard, for people who need it. The obligations that come to the professional man in these respect are incomparably greater than those which come to the proprietor of the retail dry goods store, or to the proprietor of the grocery store, or to the manufacturer of automobiles, or to the banker who is called upon to loan money, and I feel hurt whenever I see an attempt to ignore these professional duties and standards and obligations as distinguished and different from business and commercial standards and obligations.

DR. A. V. LOUDERBACK, Chicago:

In referring to the various kinds of safe investments, life insurance has been named, and life insurance endowment policies have been commended. They may serve a good purpose to those who cannot save money unless they are tied up in a contract to do so. But we should consider that in buying an endowment life insurance policy we are paying for two things and we can get but one of them. We are paying for life insurance and we are paying for investment. If we live, that which we have paid for life insurance brings us no return. If we die, we get nothing for our investment. If in purchasing a life insurance policy, we purchase a type of policy which is safe and conservative—which must be legal reserve life insurance—we will have to pay for life insurance only, and if we have the gumption to save our money besides and invest it, we will have returns upon our investment. That is a point that should be understood by all of us in considering endowment life insurance.

I want to endorse the sentiment expressed by Dr. Noyes and to raise my cry against an appeal to the mercenary side of the dentist. Our purpose should be first service, and the money side should be secondary. In saying it is secondary I do not say it is unimportant, but to put it first and service second is to lower the moral standard of the dental profession. (Applause.)

DR. GEORGE H. HENDERSON, Springfield:

I want to say a few words with reference to fees. The last speaker has said, the moral standpoint must be looked into, but that does not necessarily mean that we should not look after the financial end of our business. There is a vast difference between practicing dentistry in the city of Chicago and in the small cities or towns in this state. We know that the fees for crowns in Chicago vary from \$2.10 to \$99.99 each, and we have to remember just as these fees vary, so do the men. I told a patient not long ago that the very best dentistry was done in Chicago, and some of the worst. When we come to the outside cities in the rest of the state we must look to another point. You cannot in the smaller towns and cities do as you will, yet very much larger fees might be obtained. Every man has an individuality, and that individuality makes a big difference in his fees, but we cannot get

unduly high fees or very much larger fees than the other fellow. It is true that some do get more than others, but when you get a minimum fee to stimulate the fellow who does not get as much, you will not lower the standard of dentistry, but you will raise the chance for the other fellow to get a larger fee. If two or more of us agree to raise our fees and to stand by them as gentlemen, we will all be the better off. But remember this, that we must deliver the goods, and if we are not qualified to deliver the goods for which we charge, then I think we would be better if we would go to Dr. Koch or to Dr. Brophy, or to some college man and learn until we can deliver the goods.

Dr. Whalen experimented on our Society with a paper, and I wish to thank him for it. If he would experiment on some of the rest of you, I believe you would all be better off, and a minimum fee is the best way of which I know. You know as well as I that if we were to try to find out the fees obtained by the members of this Society right here and get them to make a list, there would not be 50 per cent on that list as made that would be trustworthy. (Laughter.) I know whereof I speak. I called on many dentists in their offices, and I know what I got from them. You must have a dependable proposition for the young man. It is true that the new man has a great deal to withstand in opening a practice, because of the very fact as mentioned, that he cannot find out the fee that the other fellow is getting. He cannot, and I defy him to do it in the average town in Illinois until he has had experience with the other fellows, and then he will often be disappointed. It is very often true that some men are rated a-way up yonder and their work is a-way down here (laughter), men who have big reputations among the people, yet who are absolutely the worst dentists in the community. How are you to compete with that kind of opposition? You cannot compete with them and successfully put it over, because we cannot as members of a society afford to knock the other fellow, and if a patient tells you of the miserably low fee he or she paid to some dentist, what are you going to do? We do not knock. We cannot do it, and how are we going to get along?

DR. J. N. CROUSE, Chicago:

The question of building up a practice and getting the fees is

one that ought to interest every man. I had some experience along this line when I first went to Chicago and opened an office. I fitted up a very nice office at a great expense and went to the Briggs House to get my meals. When I went to settle my board bill, the head clerk said to me, "Mr. Crouse, are you in business here?" I replied, "No, I am not. I have had an office opened for seven weeks, and have not seen a patient, and I think I am a dentist." He said, "If I go to a good dentist he will charge so much that I cannot afford to pay him. If I go to a poor one, and let him take care of my teeth, while he may not do as good a job, his bill will not be nearly so large." I said to him: "You are just the fellow I want. Come around to my office and let me fill your teeth for you, or I am afraid I will forget how to do it." I made him a filling, went back to my lunch, and found he was back in his private office with a mouth mirror and had six of the richest men in the county looking at that filling. I had my lunch and got away. The next day the proprietor of the hotel sent me his daughter. This was on Saturday. Sunday I went to my dinner at the Briggs House and was terribly homesick and speculated as to what I was going to do. There were two old codgers seated at my table and they were from the country. One of them broke off a big gold filling from a front tooth while he was eating his dinner and picked it out of his food. He said to the other fellow, "What will I do? I have no particular business to attend to tomorrow." The other fellow said, "I know a dentist in Chicago who lives at his office," and he told him my name. He said, "We will go around there after dinner and he will fix it for you." That was the last I thought of it. Monday morning, when I went to my breakfast, the proprietor of the hotel said, "Crouse, come here. I want to introduce you to a gentleman." I recognized the fellow immediately as the one who broke off a filling at the table. He said, "Can you fix it?" I replied, "Wait until I get some breakfast; we will go around to the office, and I will tell you." I was very independent, although I had no sign of getting a patient except that one. In a short time I figured out who this man was. He got in the chair and said, "Can you fix it?" I replied, "Yes, sir." "Can you do a good job?" "Yes." "What will it cost?" "It will cost \$45 to \$50." "Isn't that a big price?" "Yes, sir,

but I left a good practice where I did not get good fees and I came here to get fees consistent with good work, or I am not going to stay. Good work and good fees go together." He said, "There is something in that." I scratched my head, looked over my engagement book, when he said, "Can't you fix it today?" I studied a little longer, and then replied to the patient, "Yes, I will do it for you today." I did the work and got \$50 for it.

I have gone into colleges frequently in the different cities when working for the Dental Protective Association and the professors have said to me, "Crouse, give the students a talk," and I have talked to them on fees and how to get good fees. The first proposition is, that whatever you do, do it better than anybody else. The next point is to so treat or manoeuvre your patients that they will not go to anyone else; then you can get any kind of fee. It is largely a question of holding patients, and having courage enough to ask for good fees. That courage is what we lack. The members of the dental profession are cowards. They can get much larger fees than they do if they ask for them.

I have given you that one illustration because I think it is a good one. It was when I first came to Chicago and had no patients, and yet I had courage enough to put a price on my work which gave me a good fee. (Applause.)

DR. TRUMAN W. BROPHY, Chicago:

We have all enjoyed this paper very much. When I was a young man, which was not very long ago, I obtained different kinds of life insurance. The kind I would recommend to any man is the endowment policy, notwithstanding the discussion in some instances has been rather against it. A little money paid in premiums, annually or semi-annually, as the case may be, will soon create quite a nice little estate, and when the time arrives for the payment of this money to the insured it will seem like finding it.

The question of the income of a dentist is of great importance. He must make for himself a home and provide for his family and make provision for the future. He should see to it that he has a competence for his old age, and in this connection I will say that I believe the members of the dental profession have done even better than the members of the legal profession and members of the medical profession. There are men here who will agree with

me when I say that the average income of the dentist is in excess of the average income of the physician and of the average income of the lawyer. It is known that the income of the medical men generally, taking the average, amounts to less than \$1,000 a year, and I do not think that the income of the lawyer is any more.

It has been said many times in my presence, and I dislike to hear this remark made because I know it is not true, that the professional man is a bad business man. Some reference has been made to that here this afternoon. Let me ask you fairly and squarely to look at this matter in the right light. You all know the records of business men show that 95 per cent of the merchants go bankrupt. They are failures in business. You cannot find that percentage of men in our profession who are failures. The professional man, as a rule, makes for himself a home. He pays his bills, he educates his children, and he makes provision for advanced life. If a business man fails, and he finally does recover, he is operating on money that he owes somebody else, because he is bankrupt and has not paid his debts except in part. Professional men do not do that. Professional men do not, as a rule, go into bankruptcy. We find but few of them who do, but if they practice their profession and, as Dr. Atkinson used to say, "Hew to the line," save their earnings and invest them judiciously, they succeed. I want to protest against the statement that the professional man is a bad business man.

I believe in seeking good advice. The late John Farson of Chicago, who was a very successful banker, on one occasion when about to board a train for New York was surrounded by a lot of newspaper reporters and was asked this question: "Mr. Farson, will you please tell us why and how you have been successful, or how do you account, in other words, for your great success in business?" Said he, "That is very easy. I account for whatever success I may have had in business in this way: by associating with the right kind of people." "Oh, yes," said one of the reporters, "that may be true, but please tell us who are the right kind of people." Mr. Farson replied, "That is easy indeed—the kind of people who know more than I do."

A young man who would be successful in his profession must associate with men who know more than he does. He should take

advice about investments from some reliable banker if he would succeed—some one who knows more about these things than he does. I feel that this remark of Mr. Farson applies to the different incidents of life.

DR. G. D. SITHERWOOD, Bloomington:

The question has come up in a certain dental journal as to how many hours it takes to make a rubber plate in the office. There never was a greater mistake from my standpoint than that item that has been going around in the dental journals. If I cannot make two rubber plates in a week, and attend to my regular appointments in the office at my present age, I will feel ready to quit the practice of dentistry. You talk about taking ten hours of the regular hours of work, that is, say I work from 9 a. m. to 12 m., and then from 1 p. m. to 5 p. m.; if I cannot make two plates in a week without taking any of my regular time out of that, I am ready to quit dentistry. The same with gold crowns and bridge work. Many men have their bridge work and plate work done in laboratories while they are waiting in their offices. If they would put in a few hours at this work themselves it would be of great benefit to them.

One word more. It is not so much what you earn as what you save. Out of the lowest wages I ever paid to any young man working in my office a certain young man saved \$500. I paid more than twice as much to other young men who did not save anything, so it is a question of what you save and not what you receive.

With regard to fees, I never have any complaints about the fees I receive, but it is the folks I work for that complain about my fees. (Laughter.)

DR. WHALEN (closing the discussion):

I feel very much pleased with the discussion which my efforts have brought forth. I expected considerable opposition, as you all well know. My aim was not to read a paper for the benefit of the men who have reached the pinnacle of fame in dentistry, scientifically, ethically, financially and otherwise, but it was an appeal to the rank and file of the profession who are struggling to get themselves on their feet, so to speak, and they are in the majority. We have practically 4,000 dentists registered in the State of Illi-

nois, and after several years, approximately nine years of Herculean efforts to reorganize our profession, we have got the magnificent number of 1,700 into our Society, and never have we had at a state meeting an attendance which exceeded 700. Where are the other men? Are they at home investing their money? A great number of the members of our profession are not receiving adequate remuneration for their services, what has been said here about our ideals to the contrary notwithstanding. We have a duty to perform. We are going to listen to a man of eminence in dentistry this afternoon who is going to speak to us on oral hygiene, which is intended to educate the people in the care of the teeth. We are assuming an obligation in this state. He is going to start a wave rolling with renewed impetus. We have already done much work along the line of hygiene, but it is going to come in larger and greater force, and we must assume an obligation and that obligation is going to take from us time. Men in other callings, in merchandise and commercial pursuits, indulge in charity with one hand, while with the other hand they keep on with the business in order that the money may roll in. It is not so with the dentists. It is not so with the physicians. When they engage in charity work their income ceases absolutely. The dentist does not earn a cent, and unless he is remunerated when he is engaged in duty in his office he cannot do this great humanitarian work which is before him, and no one on earth can do it but the dentist. You may talk as you please, but if we are not fed and do not receive sufficient money to properly take care of our families and lay up a competency we cannot engage in this work. Who will support us?

In Boston Forsyth left millions of dollars for charity work. In Chicago they have 11 infirmaries. Who furnished the money? Did the Chicago dental profession furnish it? No. Julius Rosenwald gave the money with which they have done wonders there. We have no endowments. Here in Peoria, Springfield and Jacksonville and other cities of the state this work is waiting, and we must do it, and unless we are supported morally and financially by the people of the various communities for whom we work and serve, we cannot engage in this work. We must demand a remuneration. You say the young man has to find out his mistake after a time.

Why, in the name of heaven, must we let every young man make his mistake? Why can we not get together, have good fellowship, take the young man by the hand and assist him? He does not know much about business. We should take these young men and assist them and put them on a firm business basis. We should assist them in the profession as well.

Much has been said here this afternoon in regard to high ideals and ethics and slams at fees. I do not want to be misunderstood. I said in my paper, and I reiterate it, that there is no one in this audience or any place for whom I would step aside or take off my hat when it comes to allegiance to the highest ideals of this profession. But I also know that I must get remuneration for my service if I want to lay up anything for the proverbial rainy day.

I think my suggestion in regard to the members of the component societies getting together is admirable. We do not want to sandbag the public, but what we want chiefly is to teach the people that the cost of production varies, that operations and service vary, and get that cost, and when we do we are making something for ourselves and our families.

I thank you most kindly for the reception you have given my paper and for the liberal discussion it has evoked.

AMERICAN DENTAL SOCIETY OF EUROPE, FORTIETH
ANNUAL MEETING, HELD AT FLORENCE,
MARCH 21-24, 1913.

DISCUSSION OF DR. HIRSCHFELD'S PAPER, "A NEW METHOD OF REPLACING PORCELAIN FACINGS ON BRIDGES."

DR. N. S. JENKINS (Dresden):

In opening the discussion, said it seemed to him that the very practical and novel method of restoration which the author had referred to was distinctly original. Personally he had never seen a restoration made in that way, and had not heard of it before. It seemed so natural, however, that it was a wonder it had not been thought of previously. He congratulated the author and thanked him for having brought to the notice of the members something which was at once so practical, so original and so simple.

DR. W. HIRSCHFELD:

In reply said that before putting the paper down on the programme he felt in a somewhat embarrassing position, because he thought it dealt with a subject which it was hardly worth while bringing before the notice of the members, especially as there were so many scientific papers on the programme. If his little contribution had the effect of abolishing in the future the worry and annoyance which a mishap of the nature to which he had referred caused, he was sure the members would excuse him for having taken up their time.

DISCUSSION OF THE PAPER OF DR. DUNN ON "THE PROBLEM OF IMMUNITY."

PROF. A. CHIAVARO (Rome):

In opening the discussion, thanked the author in the name of Italian dentists for the kind words he had used in regard to them in his interesting paper. The question of immunity so far as it concerned dentists was a very important one. In Florence one of the teachers of the University, Dr. Mya, had discovered in the sores in the mouth of a patient suffering with typhoid fever the bacillus of typhoid fever. Other scientists such as Bendix, Bickel and Blum, had also found the bacillus present in the mouths of patients suffering from typhoid fever, and that an almost pure culture could be obtained from them. In the present year Dr. Puryesza and Dr. Perl of Vienna had made researches in the same direction, and they, together with two French doctors, Dr. Gould and Dr. Girales, found that the bacillus was present in the mouths of 60 per cent of cases of patients suffering from typhoid fever. That was a most important discovery for dentists, because previously it was thought that typhoid fever could only be spread by fish, and that there was no other way of infection. It had now been proved, however, that the mouth was one of the principal sources from which typhoid could be spread among the same family. It had been discovered that almost pure typhoid fever bacillus could be obtained in large quantities in milk; and great contagion might be spread in a family, one of the members of which was sick with typhoid fever and had decayed teeth. Dentists therefore had a great field of work in that direction which should be carefully studied, because people with clean teeth and healthy mouths would

be immune from disease. The point was an entirely new one, which he hoped some of the most scientific members of the Society would take up during the year and subsequently give a report upon it to the members, because it was a question of universal interest, many deaths occurring every year from typhoid fever, which was prevalent among all the nations. All who knew Dr. Dunn were thoroughly acquainted with the fact that he was the personification of kindness, and the members would appreciate that in his paper he had shown not only great courtesy, but had proved what a golden heart he had. Italians could not say more than that they were proud to have him practising in their country.

DR. H. W. BÖDECKER (Berlin):

After thanking the Author for bringing the subject before the Society, said that unfortunately most of the members were interested in their own profession and had become somewhat short-sighted; they would not see what was going on beyond their own field and the essayist had done what he could to take them out of that narrow field. Immunity and the question of the condition of the mouth had assumed great importance, in the modern school of dentistry, and the reason for their existence had been made more apparent, at least to the medical profession, by the recent discovery that the mouth was one of the most dangerous points of entry for pathogenic bacteria. He entirely agreed with what Dr. Dunn had said on the question of immunity and wished to cite one instance in that connection which was of great interest, namely, the fact that when Spain conquered Mexico it was not with iron shot, but with smallpox. Smallpox which was brought over to the race of the New World which had never suffered from the disease, devastated them in much greater numbers than cold steel and powder did. In a certain way they gave the Spaniards something in exchange, syphilis, which the Spaniards in their turn spread all over Europe.

DR. W. DUNN:

In reply, thanked Prof. Chiavaro and Dr. Bödecker for the very kind words they had use in speaking on the paper. Personally he had learned a great deal from the discussion, so that he felt that he had received more than he has given. With regard to Dr. Bödecker's remarks about infectious diseases being carried over to

other countries, it was a well-known fact that brute man, who ought to be the best equipped against infection, was really the worst off of all, and it was only necessary to bring a savage race into contact with civilized communities for them to die off from tuberculosis in such very large percentages that they stood a slight chance of pulling through.

CHICAGO DENTAL SOCIETY.

The regular meeting of the Chicago Dental Society was held on Tuesday evening, May 20, 1913, at 8 P. M., in the University Building.

Dr. James H. Prothero, President of the Society, occupied the Chair.

Mr. L. A. Goddard, President of the State Bank of Chicago, was the speaker of the evening. The subject of his address was "A Business Talk by a Business Man." Mr. Goddard spoke off-hand, being a rapid talker and dealing considerably with figures made it difficult to get a full or correct report of his speech.

MR. GODDARD:

There is something about the sound of the word "money" that has a very fascinating ring to it, something that attracts the ear of everybody everywhere, under all conditions and circumstances, so long as they have their intellectual faculties. Money enters into every phase of existence, joy, sorrow, sickness, health, prosperity, poverty. Money is probably the most sought after and the most coveted of any material commodity in the world, and strange as it may seem, it is probably the most abused, most cursed and most hated of any material commodity. People of all nations are chasing money,—every country in the world just the same as ours. If there is a universal language it is the voice of money, because money talks. There is something also about money that smacks of the sensational in a way entirely different from anything else.

If one of you dentists puts in a bad filling or pulls a wrong tooth you do not get any notice of it in the papers for the reason that a bad tooth does not concern the public as much as a bad bank. I do not say this in the way of criticism of the newspapers because

there is no newspaper man here ; in fact, I think that the press in this respect is of great benefit to the public because there is no doubt, ladies and gentlemen, that many a man is tempted to invest in some get-rich-quick proposition, or take a plunge in something that he is in doubt about himself, with the possible chance of making big money, whereas the banker knows if he gets in bad he will get the benefit of prominent headlines in the daily press. This fear of being published to the world in this unfavorable light has kept men from going wrong in many instances.

Now, it is a mistaken notion to say that this chasing of money is confined to the rich. The rich are often abused and condemned for having it, and many times they do not get as much as they deserve ; it is often times true that those who are possessed of large wealth ought to be condemned because of the way they get it as well as the way they use it ; but as you go through life just notice the man who is the most abusive of the thrifty man, and see if it is not a fact that in many cases it is some fellow who has played the game himself and failed, and probably failed because he did not play square. A man who does not play fair may succeed temporarily, but, "however things may seem no good thing is failure and no evil thing success." Wealth is no evidence of character. Wealth is a crime if gained dishonestly. Any man who gains his wealth dishonorably, squeezing the life out of an innocent and helpless man, taking advantage of his opportunities whether in sunlight or by dark lantern, is a criminal ; on the other hand wealth is honorable and to be respected if gained by frugal habits, industry and wise investments, provided it is used humanely. Poverty is no evidence of character. You often hear it said in defense of a wrong doer that he is a poor man. It is true that that is in a measure a defense, but it is not a measure of his character. Poverty is reprehensible if brought on by wilful dissipation, by idleness as a choice, and by foolish extravagance. No man has a right to impoverish himself wilfully and deliberately, in justice to himself and his family. On the other hand poverty under circumstances that can't well be avoided is entitled to greater consideration and respect by those who are more fortunate by reason of more favorable environment and opportunity. As I look at it, any man in a state of poverty, even if inexcusable is entitled to sympathy and should not

be permitted to suffer for the material things of life. We cannot always know the environment or influence that causes a man to be lazy, a drunkard or a spendthrift.

Talk about tainted money! There is no such thing as tainted money. Money is not tainted. It is the use of the money that causes the taint. Back of every so-called tainted dollar is a tainted man. A counterfeit bill is not tainted, as our Scientist friends would say, it has no life, substance, intelligence. The man who would use it fraudulently is the counterfeit.

Now, gentlemen, there is something I would like to speak of for a moment. If I had the eloquence and the time I would love to go from one end of this country to the other and speak against the great damage that is done by speculation. I am not talking to you because it is commonly said that dentists are frequently led into taking chances, but of all the crimes in this country that have caused the banks to go to the bad speculation has been the one, over and above everything. No banker has a right to speculate under any circumstances. If he wants to speculate he ought to get out of the banking business. He has no right to speculate with his own money even; any man who has sense enough to be in the banking business knows where to draw the line between speculation and investment. I am not speaking against legitimate investments, but no banker who sets himself up to be trusted with the funds of others has the moral right to speculate, and no depositor of a bank has a right to speculate with any money he owes to the bank; in fact, speculation is morally wrong.

I remember thirty years ago, in 1883, when the first bankers' association of Illinois was organized in the southern part of the state. I was the secretary at its organization. One of the first things we did was to pass a resolution that we would not loan money to any person for the purpose of speculating on the exchanges. Even at that time there was a great craze for speculating that was simply driving to the wall some of the best business men of practically every community.

We had, up to 1897, the greatest ten years of prosperity this world has ever known, and it was during that decade that many of the get-rich-quick schemes were brought to the front, and it is a fact that you dentists were picked out as victims in many cases.

Men skilled in the art and peculiarly adapted would be selected to call on men of this or that profession in order to get them to invest. I remember one instance of a man who had two lots in a western city in the gold district. He sold those two lots to a man and took a bond for them. The buyer in order to pay taxes was going to erect a couple of cottages. In excavating he struck a pocket of gold and took out fifty or sixty thousand dollars of the precious metal, but he took out every particle there was. Along came an enterprising party and bought those lots for a song, organized a company and advertised in the most fascinating way you ever saw, offering so much treasury stock to investors with which to buy machinery, etc., saying sixty thousand dollars were taken out by hand in ninety days, thus creating the impression there were millions practically in sight. I understand that three or four of them made an independent fortune out of that scheme. Another case I call to mind was that of a public electric light proposition down in the central part of this state. On account of the unusual prosperous times, it was paying very well, making for the time being interest on about \$100,000. Some people came along and paid \$47,000 for the plant, a good price for it. They turned around and bonded it for \$100,000 and issued stock for \$100,000. They got some underwriters to take the bonds for \$90,000, who retailed them to buyers for \$100,000. The purchasers of the property made a profit of \$42,000, and retained ownership of the business. The underwriters made \$10,000, and the men who bought the bonds have them yet, with the interest long since defaulted. The concern is now in the hands of a receiver. The stock is worthless and the bonds are worth practically nothing. The losses fell on the innocent investors.

A bank has absolutely no right to fail. If a bank fails there is something wrong, either criminally, or criminal negligence in some way. If a bank starts with the amount of capital required by the law and follows the law in making its investments it might lose money, as far as that is concerned, but it cannot, if it follows the intent and purposes of the law, fail to pay its depositors. A bank may suspend, because it may by sudden unexpected causes, run short of cash, but if the banker has only a fair measure of common sense and has been honest, the assets in the vaults will

show where the money has gone, and the final result will not be a disastrous failure. The trouble is that failure comes from the inside of the counter and not from the outside.

You will be perfectly astonished when I tell you, however, of the small losses there are by reason of banks failing. As I said, there is something about money that catches the eye of everybody, and when there is a prospective loss by bank trouble, great notoriety is given to it. The other day I asked the bank examiner to help me figure up the losses of the national banks of this country, and according to our figures the average losses to depositors in proportion to total deposits was one five hundredths of one per cent. In other words twenty dollars to each one million dollars, and the amount of a two cent postage stamp to each one thousand dollars.

Banks do not create panics. Banks do not like panics, for panics hit them both ways. The good customer wants to borrow money and the banker does not want to refuse it to him, and yet the bank requires so much money to keep going and pay its debts on demand. The profits of a bank are made by loaning money, so of course, its assets are not all cash on hand. In panic times people who have money in the bank want it, and it is hard for the bank to collect money from the people who owe the bank.

I want to say that in this country I believe we have the most progressive and the ablest set of bankers in the world, and they have been assisted by the laws in this country the least of any country in the world. Do you know that the national banks of this country are now working under a law passed in 1863 as a war measure, in order to create a market for the sale of government bonds to raise funds with which to prosecute the war? It was passed in a hurry, too, and remains to this day almost the same. It was an excellent measure, but when the act was passed the entire money was 675 million dollars. To-day it is 3,650 millions. The growth of the assets of the national banks alone has been from 1,200 millions at that time to 25,000 millions now, and yet, as I say, we are operating under the same law, with a few changes of minor importance. The law was not passed for the benefit of national banks, but there had to be some inducement to encourage the organizing of national banks in order to find a market for the government bonds. Of the entire amount of government bonds out-

standing in the United States to-day, 80 per cent are held by the national banks of this country, 75 per cent to secure circulation and 5 per cent to secure deposits. There is one issue of government bonds bearing 2 per cent interest, amounting to \$647,000,000, and \$622,000,000 of those bonds are carried by the national banks in order to secure national bank currency. In 1907, during the panic, those two per cent government bonds were selling at 106 and 108, because the banks had to have them in order to get currency. That created the market, while other good bonds bearing 5 per cent interest were selling about ninety, if they could be sold at all. Suppose those 647 million of government bonds, or 622 million were turned loose in the open market by the banks, unless protected by the government I think you would see a pretty rapid slump in the price. Our government is criticised by other governments for maintaining that law, making it appear to the other countries that the United States is on a 2 per cent basis. Those bonds are even selling at a premium to-day. I picked up a paper the other day and read this statement, that all a national bank had to do was to buy \$100,000 worth of bonds, and it could then issue \$100,000 in currency and get 6 per cent interest on the currency and 2 per cent on the bonds, making a clean profit of \$8,000. Let me see, if you buy the bonds now, the bank would have to pay out \$101,000 in money. On that the interest would be \$6,060. There is a tax of \$500. That would be \$6,560. There is a fund necessary to pay expenses of mutilated currency that is shipped in and new currency shipped back, about \$150, and there is a little sinking fund that is necessary, and what is known as 5 per cent redemption fund you have to deposit with the government, which would be \$5,000, the interest on which would be \$300. The best you can possibly make on \$100,000 of national bank currency, providing it is all loaned out, is about $1\frac{1}{4}$ per cent, or about \$1,125 on \$100,000 currency. The bank has to deposit United States bonds with the Treasury Department on which to get that currency. With every \$100,000 bonds it gets an equal amount of national bank currency. The 5 per cent in addition must be deposited. If the First National Bank gets any new currency it has to redeposit at once that amount, and keep its deposit good. If the bank goes to pieces that national currency is good. The bank's condition does not disturb it. There

is a government bond in Washington to secure that United States note. When a bank deposits that \$100,000 bonds, it cannot take them out until it replaces them with an equal amount of money. The government has the money or the bonds on deposit to secure all outstanding national bank notes, whether the bank itself is in existence or not.

I want to say a word about the Aldrich-Vreeland bill. That bill is on the statute books. It is not at all adequate, but it is a start. Champ Clark compared the Aldrich-Vreeland bill to a bad man in Montana, who was strung up and this placard put on him: "This was a very bad man in some respects and a blamed sight worse in others." (Laughter.) The Aldrich-Vreeland bill legalizes what the clearing houses did in 1907. They issued the clearing house certificates. They had to do that or stop. If they had not done that business generally would have been at a standstill. That bill authorizes the deposit of certain collateral securities with the government of the United States to secure circulating currency just the same as clearing houses issued clearing house certificates. It requires certain organization. There are eighteen of those organizations in existence now, ready for an emergency, if it may become necessary.

In this country we have what are called central reserve cities. There are only three of them, New York, Chicago and St. Louis.

The law requires national banks of those central reserve cities to carry in their vaults at least 25 per cent of their deposits in cash. Other cities like Philadelphia, Boston, Cleveland, Des Moines, Detroit, and so on, are what are called reserve cities. The national banks of reserve cities have to carry 25 per cent of the deposits as a reserve, but they are permitted to carry a portion of their reserve with central reserve cities. On that they get a little interest. In smaller cities the law requires banks to carry not less than 15 per cent of their deposits as a reserve, but they can carry a portion of that in any reserve or central reserve city. Now you can understand how it is that the money accumulates in the central reserve cities. Even Chicago must carry large balances in New York in order to draw exchange, because that is a financial center, as far as that is concerned, and when the panic came on in 1907, as a matter of fact, money was going out

of New York so fast they had to put the lid on. As soon as they did that it necessitated Chicago doing likewise. We were sending out something like twenty-five million dollars a week to other cities more than was coming in. We had to put the lid on, and practically every bank in the country had to put the lid on, not air tight, however, by any of us. It was no special credit to a bank if it did not. The banks had to do it to prevent the people from hiding the money away; banks had to see that some means were supplied to meet pay rolls, to prevent failures, and yet not force their borrowers to the wall by pressing payments. The labor unions co-operated with the banks, and that was the strongest factor in saving the day. We had no law in this country to meet an emergency of that kind. We have a condition that confronts us to-day. You often wonder why rates of interest are so high while the whole country is prosperous. Money is $4\frac{1}{2}$ per cent with the Bank of England, and it has not been higher than that in twenty-five years, until this year, when it reached 5 per cent for a while. There is a general like international condition. Germany is supposed to be hard up for cash. Germany is prosperous, but industrially overloaded. France has been financing the Balkan states. The Bank of England is putting its rate up in order to discourage heavy borrowings and too much expansion of credits. In this country we have the unusual condition of money being 6 per cent at a season of the year when interest rates ought to be low. Next fall we have to move the crops, and we want to take time by the forelock, and be prepared for the demand for money.

I want to talk about one other matter, and that is the guaranty of bank deposits. It is said that it has proven a failure in Oklahoma, because Oklahoma is a new state and the banking department, perhaps, not as yet thoroughly organized. I do not know how it has succeeded in Kansas. I heard Mr. Bryan make a speech at the Bankers' Club, defending the guaranteeing of bank deposits. As I understand it, Senator Owen favors the guaranteeing of bank deposits. It is not improbable that the question may come up, and that it may sometime become the law. I am not going to ridicule it, and I am not going to endorse it. The argument against it is that it will encourage unfit competition in banking, that a speculator can

organize a bank and get deposits by offering to pay more interest than a good banker can afford to pay. I do not see so much to that argument. Perhaps, if the government had such a law back of it, the examiners would be more critical. The examinations are now pretty thorough. We have in our large cities a government examiner and a state examiner and clearing house examiner. There would doubtless be more confidence inspired if the deposits were guaranteed. The banks could, by creating a fund, cover all losses, and by making the examinations more rigid, the law more strict, and the penalties more drastic, it wouldn't require very much proportionately. You say then, why aren't you in favor of it? Simply because it is not necessary. We have the best bankers in the world and a guarantee of deposits is not needed. There is not much crookedness in banking. The government is getting into the banking business pretty strenuously anyhow, and the bankers do not expect a guarantee of deposits, and the government need not do it any more than to guarantee anything else.

I read the other day that thirty-five billion of assets are in the trust companies of the country, more than one-quarter of the entire wealth of the whole country, and in fifteen years there have been only three failures, with losses of practically nothing. With 35 billion locked up with the banks, and for fifteen years nothing lost worth speaking of, certainly speaks volumes for the integrity of the banks and trust companies of this country.

I feel like giving a little moral application in closing. Too many people think there is nothing in this world except money. The man who is rich in nothing but money is a very poor pauper. Some men think they know more than Solomon, who says: "With all thy getting get understanding." Their idea is: "With all thy getting get money." Some people of this country and all other countries have gone money mad. If I had my life to live over I don't know but that I would go into something else outside of an atmosphere of money. I do not know whether I know enough to be a dentist. Riches gained by dishonesty means bankruptcy to the soul. There is something worse than a bankrupt pocket-book. Whether it is replenished or not, you

are through with it when you lay down the working tools of this physical life. It is not so with the bankrupt soul. The man who sells his birthright for a mess of pottage and bankrupts his soul cannot get away from it. Anybody can strike a Mephistophelian bargain by selling his soul, but he himself must pay the penalty.

DISCUSSION OF MR. GODDARD'S ADDRESS.

DR. C. N. JOHNSON:

Mr. President, I am more impressed than ever before with the fact that I do not know anything about this matter. I feel that we have had an inspiration to think upon lines outside of our purely professional pursuit. I think it would be well for the society to have more frequent meetings of this kind, bringing in other intellects, and mixing up a little more with the world than we are accustomed to do. About a year ago we had a paper by another eminent banker in this City, and Dr. Buckley has referred to the fact that that paper had been copied more than any other paper from our society. I predict, Mr. Goddard, that the remarks you have made to-night will go out to the profession, and make a profound impression upon the dentists.

Mr. Goddard has given us a broad point of view of large things in the commercial world. It was hard for me to follow some of his statements because I am not accustomed to thinking of big things and big figures. When the statement was made some time ago that the cost in dollars and cents to the people of this country in one year, because of preventable diseases was something like \$1,500,000,000, I have acknowledged ever since that I could not grasp that sum.

I am going to report a conversation held a short time ago in my office which illustrates, as Mr. Goddard has said, that money is not everything. We all acknowledge that it is an important thing, but I had in my office a young man who has made a great deal of money. He is one of the prominent business men of the city, and I know he is worth a million and a half. He said: "How do you stand this work? I know I could not stand it. Aren't you awfully tired at night?" I said: "Yes, but I get rested before morning." He said: "Doctor, let me say one thing. I have sat in your office and been in your re-

ception room and heard expressions of opinion about you that I would give a very great many of my dollars and cents to have said about me. You come in personal contact with people, and enlist their sympathy. I want to acknowledge to you when I go out and follow my pursuit there is none of that; it is nothing but the dirty dollar every day." I want to tell you that that expression sent me home feeling a little better that night. We have that satisfaction at the end of a day's work that I do not believe possible in any ordinary business relationship.

MR. GODDARD:

I have been asked whether a first-class municipal bond or a first-class real estate mortgage was the best investment. The trouble about a municipal bond is that while there may be no question about its soundness, it is generally of such a low rate of interest as not to be so very attractive to small investors, being 4 or $4\frac{1}{2}$ per cent. You can buy good real estate mortgages paying from 5 or 6 per cent. You can buy them on approval, go and look at the property and see that everything is in good shape, title and all. I know an institution that has loaned forty or fifty million dollars, and I understand no customer has ever lost a dollar, and that can be said about other careful and reliable dealers.

DR. ARNOLD:

Is there any tax on real estate mortgages at $5\frac{1}{2}$ per cent?

MR. GODDARD:

Yes, there is a tax. Anything is subject to taxation except government bonds and stocks in Illinois corporations. If you buy a real estate mortgage at $5\frac{1}{2}$ or 6 per cent, it would pay fair returns in excess of the taxes. There are no safer investments to my mind in this country than first mortgages on property where you know its location is prosperous and progressive, and where there is a safe margin.

DR. ARNOLD:

What about industrial bonds?

MR. GODDARD:

It is not always easy to know the condition of the company offering the bonds. For instance, I consider bonds of Swift, Morris and Armour perfectly good, because we have information

of their business and the securities back of the bonds, but some others that are selling at a discount may not be so desirable. You want to be sure it is some institution with an established record, or one that will not be crippled by a backset or two, such as poor crops. In making investments I would go to my banker and ask him about the particular thing. If you are going to invest in something that you don't want your banker to know about, why don't invest in it.

DR. C. N. JOHNSON:

I think the position Mr. Goddard occupies in this community is like that of a good dentist or a good physician, one to whom you may refer and get a prescription for your complaint, so to speak. To take the advice of a gentleman occupying a high place in the investment world is a good thing to do. The young men in our profession often make mistakes for want of professional advice and proper guidance. If the young professional man would seek the same kind of advice he would give to his patients he would be a great deal better off than he would be to take a chance on things he knows nothing about.

As has often been said, one who attempts to act as his own lawyer employs a very poor lawyer. He might avoid mistakes by acting on the advice of a lawyer of ability. If you act on the advice of a good banker who will be as honest to you as you will be to him as a dentist, you will be safe. That is the kind of advice we have had this evening. How many young men I know, some of whom are not so young now, who have gone on investing their money in this, that and the other thing, and have seen the day to regret it. If those investments had been made under the advice of a reliable banker they would be getting the income now. There is no class of men who work harder for what they get than the dentists, and when they are misled by promoters it works a great hardship to the investor as well as to his family. I want to express my personal appreciation to Mr. Goddard.

It is just as logical for the professional man to employ an expert in investments, as it is for the business man to employ a good dentist, and I believe every professional man should select some banker or business man and accept his judgment in all his

investments. A short time ago I happened to sell a piece of property. The next day after the transfer was published I had a great many solicitations from many quarters in this city to make me a wealthy man. If your friends know you have any money, they, with the best of intentions begin to advise you as to how to invest that money. Some of the men who called on me were my personal friends. I met them all with this argument, that this is a matter in which I never accept my own judgment. I am a professional man practicing a profession. I have selected a man who knows more than I ever will about investments, and I have left the matter in his hands. One of my friends said: "Will you give me his name?" I said: "Not on your life." I would not expect to go to him myself, and make suggestions. If you will select a man to advise you it will relieve you of a great deal of worry, and your investments will be safe. If a dentist attempts to go outside of his work he will be incapacitated for his own work. This man who has advised me has never charged me a penny, but if he had made a charge it would have been profitable for me to employ him.

DR. J. H. WOOLLEY:

Mr. President, the speaker has so expressed himself, that his remarks have been an illumination to the members present. The questions that have been asked Mr. Goddard and his answers recall an experience I had a number of years ago in regard to the advice I received from a banker friend. I had a small amount of money to invest, and asked him how best to make the investment. His advice was similar to Mr. Goddard's. He advised me not to buy bonds, but rather mortgages, rightly selected, and looked after carefully, and not to speculate. As you well know, I have practiced dentistry many years, and I have never invested in any speculation whatever, and now, at my time of life I think I have enough to keep me out of the poor house. Then, reading between the lines, when Mr. Goddard spoke of money, and said it was not everything to be sought after, I think he meant also that the individual who had accumulated his wealth should prepare for that day when his labors should be lessened, to have resources within himself so that the time would not hang heavily on his hands, that he

would have the pleasure of books, music or art. He would not be like the man on the lake front who looked careworn, and I asked him what was the matter. He said that life was a burden to him. He said he had wealth, but he had nothing else. He said: "I think, think, think, and what do I think about. I cannot think about books. I spent all this time in accumulating wealth, but I accumulated nothing else."

I was glad to hear Mr. Goddard's talk to-night because my impression had been that the tendency of the life of the banker was to harden him, but there was an uplift in his remarks, because he showed that money is not everything. It is the kind of life you lead in the accumulation of that money.

DR. GEO. N. WEST:

Mr. President, I would like to tell a story of a gentleman who used to be manager of the old Tremont House, the building in which we now are. A man from the country came back to the hotel and asked him what they meant by puts and calls. Mr. Benjamin said in his droll way: "I have never had any experience in it, but as nearly as I can figure it out it is this way, 'You put your money in the hands of the commission man to speculate on the Board of Trade, and when you call for it is not there!'" (Laughter.)

DR. E. B. STOUGHTON:

In the country where I come from you can get 8 per cent, and I have known of cases as high as 9 per cent or 10 per cent. I refer to Arkansas.

THE ODONTOLOGICAL SOCIETY OF CHICAGO.

A regular meeting was held at 81 E. Madison Street on Tuesday evening, May 6, 1913, at 8 P. M.

Dr. L. L. Davis, Vice-president of the Society, occupied the Chair.

Dr. F. E. Roach presented a paper entitled: "The Double Bow Clasp."

DISCUSSION.

DR. G. W. DITTMAR:

Mr. President, I am sorry to say that I have not prepared a discussion such as the paper really merits. I believe that Dr.

Roach has given us something entirely new. I have had occasion during the past few years to examine the text books a good deal, and I have never in any place seen a description of this form of clasp. I think, too, that it makes the right sort of attachment for the particular cases that he cites. Take, for instance, cases where the teeth converge, as in this model, the second molar leaning towards the bicuspid, the usual position for the teeth to take, when the first molar has been lost. It is very hard to put anything in there that will remain just right unless you true up the teeth to such an extent as to cut off the molar or move it distally with an appliance to get space. This particular clasp has the advantage of grasping the teeth near the gingival margin of the molar and bicuspid, and being sprung in between the teeth it will hold the appliance rigidly,—more so than the other form of clasp which would grasp it on the buccal and lingual. I cannot, of course, find any criticism in particular, and all I can do is simply to emphasize a few things along the line, or re-emphasize the salient points which Dr. Roach emphasized.

One point which I think is very important is the way in which he takes the impression, for by this means he gets a fairly accurate impression of the surfaces of the teeth necessary and also gets the tissues over the alveolar ridge compressed. That is one of the most important points in the whole technique, and one we so often fail to get in any other way. The tissues are compressed with the first part of the impression, and with the rest, the appliance holds that part in position until the compound cools. The point he gains is a compression of the soft tissues.

Another point I wish to refer to is the wire instead of plate for the clasp. We have often seen injury from a wide clasp, but I believe in grasping the tooth as this clasp does there will be very little wear or likelihood for caries on the tooth.

I want to add that I have seen, in the office, a number of practical cases in which Dr. Roach has this form of appliance, and they are simply working beautifully. I have seen them from time to time, and the patients express themselves as well satisfied, and like them better than fixed pieces of bridge work which they could not keep clean.

DR. EDWARD A. ROYCE:

Mr. President, there is really no discussion about these points. The view of the completed appliance and the impression tray speak for themselves. The impression tray and that method of taking impressions simply helps us out of a place where we have had a great deal of trouble. Practically speaking that gives a perfect impression of the overhang of bell-shaped crowns, something that we have heretofore been unable to get in any way, and I hope in a very short time we will be able to get hold of this tray so that the rest of us may have it in difficult cases.

The double bow clasp is a little different form than anything we have had, so far as I have noticed. The advantage of what you might call the "skeleton work" of that can hardly be appreciated until we have tried it. The form of the tooth, as has been suggested by the essayist, will enter largely into the construction of a case of this kind, and I presume we have cases where similar appliances to that may be constructed and those clasps used, and connected with other clasps, at a distance, with a bar, making a beautiful compound case instead of a simple case. The points of advantage in that over anything we have been able to make are just as numerous as the points you can see by looking at it. Ability to keep it clean, the lack of large surfaces of contact, the advantage of the flexibility of the long spring to adjust itself to the teeth, and the ease of removal and adaptation or replacement—all those things seem to be very desirable. It seems to me that we have again to take our hats off to Dr. Roach.

DR. STOECKLEY, South Bend, Indiana:

Mr. President, I feel that I have been well repaid for my trip over here from South Bend to attend this meeting. In regard to the matter under discussion, Dr. Roach a few weeks ago hinted to me something of the nature of the paper he read to us to-night, but I did not get a clear idea of it at that time, and I was rather skeptical when he told me of the appliance. I could not get away from the idea that the appliance would not fit exactly after it was put in place, and I also thought that perhaps there would be a crowding apart, but since I have seen his models I can see how it is perfection in itself, and like Dr. Dittmar and Dr. Royce, I feel that there is no criticism to offer. It is so

entirely new and complete that there does not seem to be any opportunity to criticize it. I am particularly impressed with the way Dr. Roach gets the impression of the alveolar ridge. I think it shows the exactness of the man in all his technique, and I feel that the technique is really more important than we had heretofore thought. This happens to be a most opportune visit, indeed, for me, as I have two or three cases on hand, concerning which I was unable to decide as to what procedure would be best, but I see a way now out of my difficulty.

I wish to ask Dr. Roach whether he would apply this double bow clasp to any of the anterior teeth. I would judge it would be just as adaptable, but wish to know whether you would advise it. It seems almost a crime to mutilate the anterior teeth, even though it is done on the lingual surface of the teeth. It still sacrifices part of the tooth and sometimes the pulp. I have a case of a prominent attorney in our city who wore a partial plate for years, with only two laterals out. I afterwards put in an inlay bridge, but I can see now that this appliance would have been just the case for this particular man. It took me two or three years to get him to consent to give up that partial plate, because he did not want those front teeth mutilated or the pulps taken out.

DR. C. N. JOHNSON:

I am frank when I say that I am more impressed with this paper than I have been with anything that has been brought out in many years, because it meets a class of cases which to me, at least, have presented a dilemma. We have a tooth out where, as Dr. Roach has said, the teeth on either side of the space are perfectly sound, and where it is a very radical procedure to drill into those teeth and take the pulps out, and your inlay attachments form an insecure anchorage in most cases. It has always seemed to me a matter of regret to mutilate sound teeth under those circumstances, and I have allowed many cases to go rather than do that. I feel that this method meets the situation more acceptably to the patient and the operator than any scheme I have ever seen presented, and I want to present to Dr. Roach my personal appreciation for bringing this out. So far as the technique is concerned there is no criticism of it. If any improve-

ment is to be made upon it I venture the prediction that it will be Dr. Roach who will make the improvement.

With regard to the impression I think I might mention another method of taking the impression of teeth that lean in this way; that is, in the case of a lower molar and bicuspid missing, with the first bicuspid present and the second molar present and the molar tipped forward. I think we can get a very accurate impression of that with modeling compound by forcing it from the lingual surface, covering half the bridge, and moulding tight against the gingival margin of the molar and bicuspid, and when that has become hard take some more modeling compound and pressing it in from the buccal, and then separating them and taking them out and you have a perfect impression. You would not in that case get the compression of the gum tissue which Dr. Roach has referred to. The only way you can get that is to scrape the model afterward, which would not be so accurate.

DR. S. KNOWLES:

Mr. President, I am going to take a stand with our friend, Dr. Kells, of New Orleans. He is the first man I ever heard get up before a society and say that the essayist was all wrong. I do not mean to do that, but I am going to take one point of exception. I have made comparatively few clasps, probably one to Dr. Roach's one hundred, and the thing that impressed me most forcibly is the fact that Dr. Roach is a true mechanic. Gentlemen, a clasp made in that way will fail if not properly and mechanically made, for I believe it requires true mechanical skill. I have a strong feeling for the inlay bridge, and the point I want to take exception to is this: The hardest cases we have to contend with are along such lines as this. I read a paper before the North Shore Society on the subject of sound teeth on either side of the space. Some years ago we were using shell crowns. We have now come down to inlays, and as a matter of fact I see in this a step forward, but I still see the objection that any clasp put against a sound tooth structure is going to cause an appreciable amount of wear. I think the average patient would keep that in his mouth over night. If it is in the mouth the chance of decay is increased. The principle is very beautifully worked out, and I believe the loop clasp is strong. It can be

demonstrated in mechanics that twice as much surface will not accomplish what one-quarter will properly applied. The thing that I take exception to is the placing of the clasp against the tooth surface, and I think we probably would have trouble with smaller surfaces. It seems to me in the case of partial dentures it is almost unlimited. I can see where I can apply this method in a very practical way, and accomplish a great deal, and I am very glad to have had an opportunity to listen to the paper.

DR. J. G. REID:

Mr. President, I certainly coincide with the last speaker. The ingeniousness of the apparatus is novel, new and beautiful, as is all the work that Dr. Roach turns out. We are not all mechanics like he is. It is easy for him, but it is not easy for me. There is no question as to the originality of the apparatus, but I cannot do it as he does. I would like to see what it will do after two or three years. I am like Dr. Johnson, as I believe I would rather allow the space to remain there. When you put any kind of mechanical apparatus in the mouth I believe you are inviting trouble, no matter how well it is made. People will not take care of those appliances as they should, irrespective of the advice you give them. If a person has two good molars and two good bicuspid I notice that they can chew meat and other food pretty well, and the teeth last a long time—longer than with a mechanical appliance in the mouth.

DR. L. L. DAVIS:

Mr. President, the idea struck me as being very unique when I first saw these models, and along the lines I would like to have made use of a day or two ago on a case that came to me from another dentist. The original inlays were small, and I cut them off and increased the amount of space. I think, as Dr. Knowles has said, that if we could have gold surfaces for those clasps to press against we would be less liable to have trouble afterward, because there is a certain friction around the points of contact that will tend to disintegrate the enamel sooner or later. I have no doubt that the stand taken by Dr. Knowles in regard to the criticism of the appliance is a very good one. If I had heard this paper last month I can promise Dr. Roach that I would have a duplicate of that appliance as nearly as I could

make it, but I should have felt a great deal safer in putting the clasp against a metal surface. We do not often see as wide a one-tooth space as this to fill. When they come to us for adjustment the space is only half as wide, and there is no room for the appliance, and in a case of that kind I think it is even more necessary to have something to prevent any wearing of the metal on the natural teeth. In that case it would mean some kind of inlay covering for the points coming in contact with the metal.

DR. E. A. ROYCE:

Mr. President, suppose we have the ideal space, with the tooth on either side of the space sound. You have to do something to fasten a tooth in there. You have to mutilate the teeth, and you practically spoil the two molar teeth. By this method the teeth are not mutilated for years, and you can put in your inlay appliance later. It looks to me like the cleanest thing I have seen.

DR. STOECKLEY:

If a bridge with inlay attachments is used it will certainly require more care in the matter of cleanliness than this double bow clasp. There is less danger when this appliance is used with the patient that will give his teeth only ordinary care, because he will naturally take it out every night and cleanse it. On the other hand, if we do not supply anything in the space, we have the teeth moving and tipping, and a dissatisfied patient. They come to us for restoration, and if we can not give it to them we will not have a satisfied patient.

DR. ROYCE:

The only thing, Doctor, is to make the best of a bad condition. You don't put it in for a life time. If the tooth disintegrates you have as good a chance to face it with gold as you had to start with.

DR. DITTMAR:

So often a tooth is lost, and the space that is there partially closes, contact is lost, the opposing tooth elongates, and the whole side is disabled because of one or two teeth being lost. This appliance, if placed early, prevents all these troubles. Dr. Royce hit the nail on the head all along the line in his discussion.

DR. KNOWLES:

I have had a point drawn out that was not clear to me. While there is a chance of the teeth breaking down, at the same time we have the point to meet of keeping the relationship below. Where the teeth have dropped down as a result of no contact this point of maintaining the relationship is a great factor. I have never worn a removable piece of work in my mouth, but I know in putting in inlays people will detect the tiniest little irregularity or rough place. The question is whether this loop would be objectionable. Children don't object to bands, but that seems to me a point that might be considered.

DR. ROACH (closing the discussion):

I am glad that the discussion has taken the turn that it did. I expected that there would be objection raised to this method. I would have been disappointed had it been otherwise. It is to be regretted that one particular patient could not be here this evening for your inspection. I realize that it is hard to believe in the practicability of a method of this kind without seeing some practical cases. I was very much surprised at these gentlemen, men of experience and thinking capacity, such as my friends Reid and Davis, and our guest, Knowles, that they would raise an objection to this appliance on the ground that this little clasp might damage the teeth on either side. Apparently they do not hesitate to mutilate these good sound teeth and put in fixed bridges. I would prefer to put in some such appliance as indicated and take a chance on the injuries it may cause, and put in the fixed bridge when the damage occurs, if it does occur, and put off the evil day as long as possible.

With reference to the impression, Dr. Knowles hit the nail on the head when he said that it was necessary that this work be done with absolute accuracy if we are going to make a success of the work. I do not believe that this thing is so complicated but that the average dentist, if he will, use ordinary care, can do it with reasonable accuracy, as well as any other operation in dentistry, and with equal success. I want to emphasize the necessity for care in taking the impression, and the necessity for getting the compressed impression of the alveolar ridge. I do not believe that the best results can be obtained

with any other method of taking impression. Dr. Johnson's method of getting the impression between the approximating teeth is a splendid one, but in order to get the parts of the teeth I require for this particular construction, and the alveolar ridge, his method would not fill the requirements. I have taken a good many impressions that way myself, but in order to get the occlusal surface, which is just as important as the other surfaces, you must have a third section. You must take both lingual and buccal surfaces and separate those, and then take the occlusal surface, and you must afterwards make the relief of your impression by tin foil, wax, or otherwise. Then by the compressed impression you have the most ideal relief that is possible. It is a fact that you cannot take an impression for this kind of work with Plaster of Paris, break it and separate it and get an appliance that will fit the ridge as it should. It will not come in contact with the alveolar ridge as it should. By this method I believe you have the most accurate method of making the relief and securing the relative adaptation of the saddle and clasps.

Dr. Stoeckley asked about the application of this appliance to the anterior teeth. I believe it is as applicable to the anterior teeth as to any other teeth in the mouth. If you will study the anatomy of all the teeth you will find a concavity below the contact point, so that when the clasp is fitted into this depression you have a very secure anchorage. I have frequently spoken of the injury that has resulted from clasps. I have opposed clasps almost all my professional life, and especially the wide clasp, but with the small contact of this clasp to the adjacent teeth I do not believe there would be any more injury to the teeth than the contact of the natural teeth. The actual contact area is but little more than the natural tooth, and the area is so slight that it is practically self-cleansing. It does not harbor food and allow fermentation to take place, even though it were kept in the mouth continuously. The greatest fault that I can see is that it is a removable appliance, and most people object to anything of that kind. They prefer something in the mouth as a fixture, and we have to use our persuasive powers to get people to wear it until they become accustomed to it.

Dr. Davis raised the objection that the appliance was not applicable to narrow spaces. It can be used wherever the space is as much as one-eighth of an inch.

Dr. Knowles asked whether patients would object to these clasps or not. I want to explain that the model shows a considerably longer clasp lingually than is necessary. If these little clasps are made smooth and fit closely to the teeth there will be no objection to them.



THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

GETTING INTO HARNESS.

After the summer vacation the harness galls terribly for a time. We come back from a trip into the country, or up in the mountains, or to the seaside, or across the ocean, where the petty restraints of the office have not touched us and where we have been living what seemed to us a normal kind of life.

The first day in the office appears to bring with it all those accumulated annoyances which inevitably weave themselves into daily practice, and we are hurried from pillar to post to straighten out the tangle. At night we have not accomplished much of real worth and are worn and chafed. We have listened to everyone's tale of trouble, which really should make a better man of us, but which fails in this and merely wears on our nerves because of the fact that the troubles are petty and of little consequence. To the conscientious listener a real and serious trouble develops his sympathy and broadens his manhood, but the continual recital of small annoyances is only depressing.

And then we think of our carefree vacation days and compare them with this first day in the office, and we rebel and lose all our beautiful philosophy and go home with a sense of utter weariness and despair. Those first few weeks at the office are trying ones and leave us with little of the cheer of life in our hearts.

Then one day we meet a fellow practitioner on the street

and have a chat with him. We find that he is having the same experience that we are, and this helps us wonderfully. Before, we had thought that we had a monopoly of the blues; that our case was the one and only, but now that others are afflicted in the same way, we begin to realize the significance of the phrase that "misery loves company." So long as we know that others are experiencing their difficulties and that fate has not singled us out for her especial target, we take heart. Then a dental meeting comes along and we shake hands with our associates and look into the old familiar faces and sit down to dinner beside them, and presto! the countenance of the world has changed and the sun shines once more.

Then some interesting cases come to the office, and we succeed in mastering them, and receive the grateful acknowledgements of our patients. The regular rhythm of the office routine succeeds the confusion of the first few weeks, and the machinery runs more smoothly, as if the oil were working into the bearings. Soon we begin to be enthused with the glory of work, the essence of achievement, the sweet savor of service, and then the harness may be said to fit once more. Will some benevolent soul in the kindness of his heart rise up and give us a formula to shorten the period from the time the harness is put on till it fits?

THE ILLINOIS STATE DENTAL SOCIETY—FIFTIETH ANNIVERSARY.

A meeting which promises to be memorable in the history of dentistry in the state of Illinois is scheduled for March, 1914, in Chicago. The Illinois State Dental Society will then celebrate its fiftieth anniversary, and if the present plans of the officers are carried out it will prove to be one of the largest meetings ever held in this part of the world. Many unique features are being worked out, the details of which are not yet ready for publication, and it is safe to predict that the character of the meeting will be such that it will appeal to every practitioner. The clinical program, which will be a prominent feature of the meeting, is being planned along original lines, and the arrange-

ment is such that every one attending the meeting will be able to see each clinic perfectly, no matter how many may be present.

The organizing ability of the officers, at the head of which is Dr. W. H. G. Logan, the president, is well known, and the fact that the plans are being formulated so far in advance is an assurance that nothing will be left undone to ensure the success of the meeting.

The regular dates of the meeting have been changed this year from May to March, so as not to conflict in any way with other state societies, and the entire arrangements are being worked out with the idea of making this an unusually attractive event.

The history of the Illinois State Dental Society is one of vigorous inception at its organization half a century ago by some of the greatest men of the middle West, and of a marvelous development ever since—typifying as it does the best there is in state society work—and it is only fitting that such an organization should celebrate its fiftieth anniversary in a worthy manner.

This is only a preliminary announcement to notify the dental world that it must begin preparations now to come to Chicago next March, the exact dates of the meeting to be announced later.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS. ANOTHER VACATION STORY.

(Continued from the September issue.)

IN THE LAND OF THE MAORIS.

Our plans had been changed since we left home so far as our itinerary was concerned. It had been our purpose to go from Melbourne to Tasmania and from there over to the South Island of New Zealand, then up through New Zealand to catch our steamer at Auckland for Suva, Honolulu and Vancouver. But we were told that the trip in winter from Hobart, Tasmania,

across the Tasman Sea to New Zealand, might be uncomfortably cold and also that it was more interesting for us to change our route back to America and come by way of the Cook and Society Islands, and call at Rarotonga, Papeete, on the Island of Tahiti, and from there direct to San Francisco. This suited us much better in every way because we had encountered cold enough as it was and were, of course, desirous of seeing new places on our return trip. So we went from Melbourne to Sydney, then sailed for Auckland, went down through the North Island of New Zealand and caught our steamer at Wellington for San Francisco.

We arrived at Sydney from Melbourne about noon on Friday, and at 4 p. m. I met the dental students of the Sydney University and gave them a lecture, after which they presented me with a photograph of their class. At 5 p. m. I met the Pennsylvania Alumni Association, of which Dr. Stewart Ziele is president. I am indebted to Dr. Ziele for the courtesy of a card to the Australian Club while there, and to a cosy luncheon at the club one day with a couple of friends. At 7:30 I addressed the Odontological Society of New South Wales, which was surely enough speaking for one day. This organization elected me as an honorary member, a distinction which I greatly appreciated. On Saturday afternoon we were invited to grand opera by Mr. J. H. Bradley, the president of the Odontological Society, and enjoyed some wonderful music.

That evening we received one of the richest gastronomical treats we had in Australia. Our good friend, Dr. Alfred Burne, as every one knows, is the most accomplished chef in the dental profession. What Dr. Burne does not know about cooking is not worth considering, and he has visited America sufficiently to know precisely what Americans like. On this occasion he prepared for us a real American dinner at his home, "Kinellan," and—ah, ladies and gentlemen, I can recall in fancy the delicious and appetizing odors of that meal to this day. First came an oyster cocktail, then clam broth, then chicken, *a la* Maryland. then stewed pigeon, then—but why tantalize my present reminiscent appetite by going down the complete list? It is too much for me—I am made ravenously hungry as I write. If you

want to have your indigestion cured go and live with a cook like Dr. Burne—provided you can find another one his equal.

The next day was Sunday and we were to sail on Monday. On Sunday afternoon—our last in Sydney—we were invited out to "Lingwood," the home of Dr. Magnus, about four miles from the city. Never shall I forget that afternoon and evening. Such a beautiful home, with spacious grounds and every comfort, such a charming family, and such whole-souled hospitality. We had music in the little theatre at one end of the house, and some recitations from the children. We had dinner, and such a dinner—I fear I should die of gout if I lived in Australia. And then, just as we were leaving, Dr. Magnus gave us two of the most beautiful kangaroo skins, with fur so soft and velvety that it would warm the heart of an icicle. The Mater seized on those skins at once and first thing I knew she had tucked them away in her trunk. Can you imagine the feelings of people traveling in a far land and receiving such consideration as this? I began to think that I had never known what true hospitality was before.

The next day when we boarded the *Makura* for Auckland our cabins were decked with flowers and filled with sweets. We received cables and letters and telegrams from everywhere bidding us godspeed, and one from Dr. Cox of Auckland, welcoming us to New Zealand. The thing amazes me when I think of it. At the dock to see us off were Mr. Miller of Melbourne, Mr. Charles Hall of Sydney, Mr. J. H. Bradley, Dr. Watson, Mrs. Alfred Burne and Miss Burne, and other friends. Dr. and Mrs. Dangar Burne brought to the ship a couple of cushions for our comfort on the trip—one covered with an Australian sea flag and the other with the Australian land flag. As the ship drew away from the dock and finally broke, one by one, the many-colored paper ribbons which hung suspended between the friends on shore and those on board, it seemed hard to realize that we had been in Australia only a few weeks. The people of that fair land had taken such a hold on our affections that it was difficult to believe we had not known them always. I could fill page after page of their kindliness and consideration, but I must hurry on.

The voyage from Sydney to Auckland was uneventful, except for some pretty rough weather. One night I was sitting at dinner in the dining saloon—my three girls having elected, for reasons sufficient to themselves, to remain in their cabins—when a wave, with a terrific crash, stove in one of the forward ports and drenched the passengers in that part of the saloon. I was at the other end and escaped, though the floor was flooded in an instant. When it is understood that the glass in these ports is fully an inch thick the force of a wave may be imagined. It was precisely as if an explosion had occurred and it created quite an excitement for a time.

We arrived at Auckland Friday, August 2nd, and that day I gave two clinics before the Auckland branch of the New Zealand Dental Association in the office of Dr. Cox, one in the forenoon and one in the afternoon. That evening we went down to the dock to see the Makura off and bid good-by to dear old Captain Gibb and his officers and crew and the passengers. We had spent so much time on this ship that it was like separating from old friends, and as the boat drew away from the dock the last thing we heard from those on board was, "Three cheers for Chicago."

Saturday our friends took us to a football match, and I yelled myself hoarse. That night the dentists gave me a banquet and said some things about me, and I said some things back. They also made me everlastingly their debtor by presenting me with two beautiful New Zealand steamer rugs—the finest rugs made in the world. One rug was the gift of the society and the other was from the honored President of the New Zealand Dental Association, J. Norman Rishworth. I was so proud of those rugs that I determined to start out on a tour of display when I reached America and show them to all my friends. They have been generally admired by every one who has seen them. During the evening we had some recitations by Dr. George Warren, which were really among the best I had ever listened to, and I voted that the man should have been an actor.

On Sunday forenoon we were taken in a ferry across the harbor to a beautiful suburb, and in the afternoon were given an automobile ride and entertained at various homes with the

inevitable and perennial tea, winding up in the evening with a dinner at the home of Dr. Cox. I wish space would permit me to speak of all the good fellows who laid themselves out to entertain us at Auckland, but if I got started I should find no place to stop. If my readers ever meet Rishworth I should like to have them remind him for me that he has promised to come to America some time soon. I wish America was not so far away from New Zealand and Australia.

Monday morning we had our first practical experience with New Zealand railroads. My readers of the dim and distant past may recall that on the occasion of our first arrival at Auckland after the long sea voyage across the Pacific I rated the New Zealand railroad whistle as the most musical sound I had ever heard. That was before I had ridden on their trains. To sentimentalize over these government railroads and associate them in any way with music is to jump too suddenly from the ridiculous to the sublime. It simply cannot be done without stretching the imagination sufficiently to break it off short and leave the piece in.

We were to start that morning for the hot lake region of Rotorua, the great show place of New Zealand, and our friends, with never-ceasing courtesy, had come down to see us off, loading us with flowers and other presents. It is about 170 miles from Auckland to Rotorua, and the way that train runs is terrifying; I never experienced anything at all like it. It rips along at about 20 miles an hour and doesn't seem to be running so very fast either. We took only a little more than eight hours to make the journey. It is a narrow gauge, like a toy railroad, and has cars so thinly constructed that you can almost push your fingers through the sides. The freight cars in this country and Australia have only four wheels and will carry about as much freight as an ordinary farm wagon. The whole thing is simply playing at railroading and not very well regulated play either. The guard comes through every few minutes and punches your ticket. By the time we got to Rotorua our tickets looked like so many sieves or as if some one had been practicing crochet work on them. At last I told the guard that I was actually sorry for those tickets and he assured me that he was

nearly through with them. I said I was glad, because there wasn't much more pasteboard left.

There was not a vestige of heat in our car, the day was bitterly cold, and the doors were open much of the time. I caught cold, and that night at the hotel in Rotorua I had a chill which nearly shook the paint off the ceiling. I remained in the following day coaxing a grate fire which we had ordered in our rooms to keep from perishing. The next time I travel in New Zealand or Australia in winter I am going to do it in *our* winter, which is *their* summer, and besides I am going to stock up with swear words in advance, to let them go at the railroads.

Rotorua is a beautiful place, with geological phenomena much like our own Yellowstone Park, though so far as geysers are concerned, Old Faithful, at Yellowstone, would drown all the geysers we saw. One of their chief geysers has not spouted for several years, but there are many unique and interesting sights to be seen and some beautiful drives to be taken to the adjoining lakes. In one of these lakes, called the Green Lake, we saw hundreds of the most glorious rainbow trout—enough to put a man beside himself and make him wish to defy the law by fishing for them out of season. As we took this drive through the mountain bush we saw in many places evidence of the rooting of the wild boar, an animal indigenous to this region. Along the mountainsides everywhere were rows of young trees planted by the state prisoners under government supervision. These trees will some day be a very important asset to the country, and it would be well if other governments would utilize their prisoners in this way. It is better for the prisoners, better for the country, and it interferes with no man's occupation.

About two miles from Rotorua is the native Maori village of Whakarewarewa (a prize to the first American who pronounces that name correctly), which is located in the midst of the thermal regions—I came nearly writing it infernal regions. Whakarewarewa smells of sulphur, it reeks with sulphur, it sputters sulphur, and it is as near hades as I ever want to get. They can keep that place, so far as I am concerned.

There are licensed guides to take you through the region, and these guides are native Maori women, some of the most de-

lightful and interesting people in the world, of whom I must write more in detail later. The name of our guide was Beatrice, and it is a name well worth remembering if you want to see Whakarewarewa perfectly and in the most fascinating way. Beatrice is modest, jolly—always smiling, most accommodating, painstaking and capable. If there is anything about the region



Beatrice, Maori Guide, Rotorua.

that Beatrice does not know it is because it has never been found out. We enjoyed her most thoroughly, and before we left Rotorua we came to look upon her as an old-time friend. The guide's fee for showing the thermal district is a shilling (about twenty-five cents of our money) a person, but you may be sure that Beatrice received more than that voluntarily and with so much pleasure. She richly deserved all she got.

As we were walking up through the native village toward the entrance to hades proper, some of the Maori children sang out cheerily to us as we passed. Those people seem to be forever laughing. Among the expressions they used we caught the word "Merican." We asked Beatrice if they recognized us as

Americans. She laughed most heartily and said: "Yes, they say you are Americans—American millionaires." It was a terrible reputation to get in a strange land, but we couldn't help it. It wasn't *our* fault.

I do not know which I enjoyed most—the wonders of nature or the charm of the natives. We saw the customary phenomena



Maori woman using the hot springs for cooking.

of boiling hot water coming out of the earth a few feet from water almost ice cold. The Maoris of this district do all their cooking in the boiling springs near their doors, and it was a strange sight to see them go out on the crust of the earth and sit by the springs while their cooking was done for them by nature.

We chanced on one very strange ceremony as we passed through the village. It was the Maori welcome to some long absent relatives, and it would make a hit on any theatrical stage in Christendom. An old Maori woman was bidding welcome to a nephew whom she had not seen since he was a child, and he and two other relatives who were with him stood meekly out

in the yard with heads bowed and luggage lying around them while the dear old aunt chanted the most dismal dirge I ever listened to. She moaned and howled and weaved back and forth across the yard as if doubled up with a cramp. It was mournful in the extreme, and if I had to be welcomed like that I should stay away from home forever. It wasn't long before



Hongi—rubbing of noses, the native Maori salutation.

they were all weeping copiously, but finally the ritual was over and there was the customary rubbing of noses, which is the native Maori salute, and things quieted down a bit. The last we saw of them the prodigals were sitting on the porch and the aunt was kneeling in front of her lusty nephew fondling his knees. That part of it wasn't so bad, but I should dislike to go through the entire ceremony of being welcomed to the hearthstone of my long lost Maori relatives.

After seeing the wonders of the place and hearing from Beatrice many of the legends and customs of her race, a most interesting recital by the way, I went to one of the baths and indulged in the luxury of a real natural hot sulphur bath, one of the most luxurious and invigorating baths I ever had. The water pours down upon you in any degree of force you wish,

and you can get a water massage in this way which is very effective. The district abounds in baths of all kinds, and is a mecca for the worn out New Zealander and tourist from other climes. In my next chapter I shall take up in greater detail some of the characteristics of the Maoris—one of the most interesting people I have ever met.

C. N. J.

(To be continued.)

BOOK REVIEWS.

EXODONTIA, a practical Treatise on the Technic of Extraction of Teeth, with a chapter on Anesthesia, a complete guide for the Exodontist, General Dental Practitioner, and Dental Student. By GEORGE B. WINTER, D. D. S. Professor of Exodontia and Lecturer on Anesthesia, St. Louis University, School of Dentistry. Illustrated with 245 original engravings. Pages 409. Published by the American Medical Book Company, St. Louis.

This is one of the most pretentious volumes ever published on the subject, and it will undoubtedly take high rank as a standard work. The illustrative features of the book are original and most excellent. All of the positions at the chair as well as the movements of the forceps or elevators in the extraction of the various teeth are described and illustrated. The direction in which force should be applied for the removal of the various teeth is clearly shown and in fact the book is intended to be a safe and reliable guide for the beginner as well as for those who have had considerable experience in extracting teeth. We recommend this volume most strongly to all those who are interested in the subject. The press work is excellent and the volume is in every way a credit to the profession.

THE GEORGIA STATE DENTAL SOCIETY—PROCEEDINGS OF NINETEEN THIRTEEN.

This is an interesting volume of 176 pages, very ably edited by Dr. H. H. Johnson of Macon, and showing that the State Society of Georgia is very much alive. We note that the society conferred the degree of Honorable Fellowship of the Georgia State Dental Society upon Dr. Frank Holland of Atlanta—a worthy honor to a worthy man.

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

The Use of a Lingual Spur:—When using a mesio-occlusal inlay in a molar in combination with a dowel crown as front abutment a spur at the anterior part of the bridge, to come in contact with the lingual surface of the tooth next to the abutment crown, lessens greatly the strain upon the labial wall of the abutment molar.—*M. J. Homan, D. D. S., Arnhem, Holland.*

Inlay Abutments:—Before resolving on the use of an inlay as abutment for a fixed bridge, it is important to find out if there is a tendency to or exists labio (bucco) cervical caries. The former condition would indicate a strong metal protection of the labial wall occlusally; the latter most times contra-indicates the use of an inlay.—*M. J. Homan, D. D. S., Arnhem, Holland.*

Oil of Cloves as Carbonizer:—Wrap a little absorbent cotton on a match or toothpick, dip same partly into oil of cloves, ignite and carbonize the die in the usual manner. In using this agent intelligently your trouble of dies and counter-dies adhering will be reduced to the minimum.—*M. J. Ruzicka, D. D. S., Prague, Neb.*

A Hint for the Colleges:—The horn mallet as it comes from the dealers is a useless tool. The long pointed end is useless and the large end more so.

To make it a useful tool, provide the students with a small saw, so they can saw off the pointed end, where it is about three-quarters of an inch in diameter, then round with a vulcanite file.

Here is a tool which can be used in the palate where it is so much needed and along the margins.—*L. P. Haskell, D. D. S., Chicago, Ill.*

Setting an Inlay:—After the inlay has been seated with a

rocking motion and malleting upon all parts it should be firmly held in place while the margins are burnished with a smooth flat instrument. The pressure should not be removed until crystallization is well under way, as several forces such as compression of air or cement, elasticity of dentin, pressure of approximating teeth and the too vigorous use of eccentric stones are likely to displace it or interfere with the cement crystallization.—*Clarence O. Simpson, D. D. S., St. Louis, Mo.*

A Trial Bite:—The bite taken with modelling compound in an upper and lower bite-tray will be very efficient though not final for it is not wholly dependable and requires the trial wax plates for assurance of accuracy. Place the tray in patient's mouth, instruct to close just enough to retain it; then with one hand on the back of the neck and the other on the forehead, tilt the head backward until the muscles of the throat are tense; then require the closing slowly to the point of proper proximity of upper and lower, and mark the mesial and bite line. This method rarely fails to give the correct rest bite, and you will find its accuracy is more certain and the simplicity of manipulation is much ahead of other means and devices you may have tried.—*I. B. Carolus, D. D. S., Streator, Ill.*

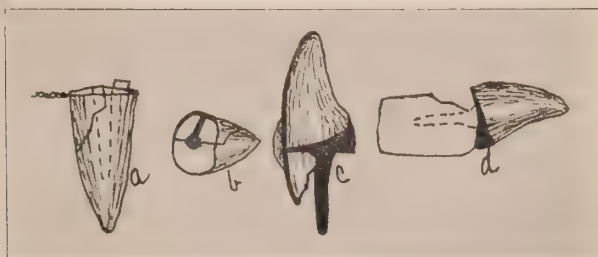
Treatment of Sensitive Dentin:—The therapeutics of sensitive dentin is varied only by the condition constituting the prime cause, the amount of pain, the deepness of the grooves or depressions at the point of irritation, and the patient's ability to endure pain.

One of the *first* essentials is instruction in the proper method of using the toothbrush and the insistence upon a reasonable amount of time to be devoted to its application. The use of a solution of equal parts of chloroform and chloride of zinc crystals at the points of irritation is good. Nitrate of silver applied in crystal direct to the spot even better, but best of all for longer periods of relief is the application of heat in the form of a red hot instrument passed lightly across the sensitive spot, the part having been previously covered with a small quantity of the oil of cava-cava.

There is no doubt that this method causes intense pain for an instant and requires courage on the part of the patient when again necessary.—*L. L. Davis, D. D. S., Chicago.*

Construction of Base for a Cast Base Crown:—I always use a pure gold disc, swaged first to a cement model of end of root, and then carrying it to the mouth and burnishing it properly. I can then get the post in and solder it. I can see just exactly where the edge of that gold is. By the way, the preparation of the root is a little different. I do not leave the base of the root at right angles with the long axis of the tooth, but trim round the periphery and dish the center some around the opening of the canal. I take an impression of the prepared root with modeling compound and fill with cement. The cement will harden in five minutes, then separate it from the modeling compound, and swage the pure gold over it. The advantage of swaging is, that it is more rigid than if you try to burnish it in the mouth. You can swage it to shape, then you can burnish it. You swage it, take it to the mouth, trim it, get the post soldered and burnish the margins, and by having the periphery of the root rounded you can burnish the edge of the pure gold disc just beneath the free margin of the gum with the thinnest kind of edge, using gauge .36 pure gold. From that base you can build up your crown.—*R. E. MacBoyle, D. D. S., Chicago.*

Repairing a Fractured Root:—When a case presents itself



with root fractured not more than one-half its length and the fractured piece is intact the repair is simple and positive. The procedure is as follows: Draw fractured part into close apposition by twisting wire around it, as in the above figure. The same technique

as for a cast base crown is then followed, so that when the wax base is secured the piece of root is extracted and carefully placed in position on wax base—the groove across end of fractured piece and the side of canal affords a definite guide in locating it (b). The piece is now secured to the crown and wax base with wax (c). The fractured surface and dowel is coated with a vegetable oil and a batch of cement, mixed stiff, is pressed into apposition with fractured surface of root. When cement is hard it is scraped down flush with piece of root, after which it is separated from crown and piece of root. Piece of root is carefully separated from wax base and crown with base readjusted to its proper position on cement model, Fig. d, and inlay wax melted into space originally occupied by piece of root and scraped down flush with surface of cement model. This gives us an exact reproduction in wax of the piece of root, united as an integral part of the original wax base in its proper relative position, which is also true of the casting. When cementing such a crown to place in the mouth I prefer to use Evans' gutta percha cement on fractured surface.—*F. E. Roach, D. D. S., Chicago, Ill.*

MEMORANDA.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Michigan State Board of Dental Examiners will be held at the Dental College, Ann Arbor, commencing Monday, November 10th, and continuing through the 15th. For full particulars and application blanks address F. E. Sharp, Secretary, Port Huron, Mich.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Indiana State Board of Dental Examiners will be held in the State House, Indianapolis, November 10th to 15th. All applicants for registration in this state will be examined at this time. No other meeting will be held until June, 1914. For further information apply to the Secretary, F. R. Henshaw, 507-508 Pythian Building, Indianapolis.

DR. CHARLES A. MEEKER.

We have just received word of the death on September 8, 1913, of Dr. C. A. Meeker, of Newark, N. J. Dr. Meeker was one of the conspicuous leaders of the profession in New Jersey for many years, and contributed much to the advancement of his profession, particularly in association and legislative activities. He will be missed by a large circle of warm personal friends.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

The semi-annual meeting of the Illinois State Board of Dental Examiners for the examination of applicants for a license to practice dentistry in the state of Illinois will be held at the College of Dentistry, University of Illinois, corner Honore and Harrison streets, Chicago, Ill., beginning Monday, November 10, 1913, at 9 a. m. All applications, together with fees, twenty-six dollars (\$26) must be filed with the Secretary at least five (5) days prior to date of examination.

Address all communications to O. H. Seifert, Secretary, 49-50 Ridgely Bank Building, Springfield, Ill.

NOTICE.

CHANGE IN THE INDIANA DENTAL REGISTRY LAW.

All persons legally registered for practice of dentistry in Indiana are required, under Section 9 of the new statute, to register with the Secretary of the State Board of Dental Examiners *annually* on or before the 31st day of December. The annual registration fee is \$1. Blanks will be mailed to each qualified dentist on December 1st.

This act applies to those dentists who have left the state or are now not in practice, the penalty being the revocation of said person's license within ninety days upon failure to re-register. The annual registration certificate is necessary to entitle one to practice.

RESOLUTIONS ADOPTED BY THE CHAMBER OF COMMERCE, ST. AUGUSTINE, FLA.

Whereas, The members of this organization take great pride in the fact that St. Augustine is the healthiest city in the United States and heartily approve the adoption of any measures that will further promote the physical welfare of our citizens; and

Whereas, It has been brought to our attention that our esteemed fellow citizen, Mr. J. T. Dismukes, has generously offered \$1,000 annually for the purpose of maintaining a dental clinic to care for the teeth of children attending the public schools of St. Augustine; and

Whereas, We believe that such service will not only increase the mental and physical efficiency of the rising generation of this city, but that the establishment of such a clinic sets a worthy example for educational boards in general to follow. Therefore, be it

Resolved, by the Chamber of Commerce of St. Augustine Fla., in meeting assembled this, the 9th day of September, 1913, That the thanks of this organization be extended to Mr. Dismukes for his praiseworthy effort to promote our public schools; and be it further

Resolved, That this organization recommend to the Board of Education of St. Augustine that the offer of Mr. Dismukes be accepted in the terms upon which it is made.

PANAMA-PACIFIC DENTAL CONGRESS.

Dear Doctor:—

Beginning the last Monday in August, 1915, and continuing for ten consecutive days, the Panama-Pacific Dental Congress will offer the dental profession what promises to be the greatest gathering of dentists ever held in the history of the world. International in character, all nations have been invited to participate. The best dental talent the world affords will be represented on the program in paper and clinic, noting the remarkable progress of our profession from the dark ages up to the present. The dental manufacturing and specialty companies will be there with the greatest exhibit ever shown.

No dentist can afford not to avail himself of this opportunity to place himself in sympathetic touch with this movement, originating in the West and promoted by Western enterprise.

To promote this great congress of dentists ample time was essential to complete a working organization, and to start an effective campaign which would guarantee the carrying out of the extensive program mapped out. It is expected the membership fee (\$10) will pay the expenses of the congress, but to meet current expenses which are entailed in an affair of this magnitude it was decided to incorporate under the laws of California and issue debenture certificates to the total of three thousand, bearing a face value of \$10 each.

These certificates are now offered to the profession at large and may be paid for in two installments. Full payment must be made by May 1, 1914. No promise can be made that dividends will be paid or that a return will be made of the money raised from the sale of these debentures, but it is reasonable to suppose that after all the expenses of the congress are paid there will be funds sufficient in the treasury to reimburse those who have been loyal and enterprising enough to subscribe and make this congress possible.

We count on the loyalty of the West to the West, and at this greatest of opportunities to hold a dental congress in San Francisco, when all the world will be coming to California at the official opening of the Panama Canal, it behooves our dentists to get in line and identify themselves with this congress by buying one or more shares, and each and every one a membership. A membership fee is \$10, and is separate and apart from the debentures. Those wishing for debentures or memberships should address all communications to Arthur M. Flood, Secretary, 240 Stockton street, San Francisco, Cal.

DENTAL COLLEGE COMMENCEMENTS.

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THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, NOVEMBER, 1913.

No. 11

THE ESTHETICS OF PROSTHETIC DENTISTRY.*

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In no department of the practice of dentistry does the want of that taste which indicates artistic culture become so manifest as in the failure to restore the natural expression by the replacement of lost dental organs. It is unquestionable that the majority of the profession engaged in this branch of practice have given more thought and labor to the best methods of restoring impaired functions, securing comfort, usefulness and durability in artificial substitutes than to the equally important question of correlation of the substitutes with the general physical characteristics of the patient. The many unsightly cases to be observed, where an attempt has been made to replace lost organs in total disregard of this universal law, are to be charged to this account. No matter how anatomically correct, or how skillfully adapted for speech and mastication an artificial denture may be, yet if it bear not the relation demanded by age, temperament, facial contour, etc., its artificiality will be apparent to every beholder.

This law of correlation, harmony, etc., running through nature, attracts and enchants us by an infinite diversity of manifestations; the failure to recognize its demands by art is correspondingly abhorrent to our sensibilities. In the social gathering, one who appreciates the law of harmony delights the eye by the taste displayed in his or her attire; another though more elaborately and expensively adorned, yet failing to harmonize details, attracts attention only by the impression of incongruity. We frequently hear the question, "does this become me?" The query plainly indicates

*Read before the Illinois State Dental Society.

the recognition that a certain law of fitness prevails. There is a relation between the physical form and the voice, from which we are led to infer in advance the character of the tones which from any given individual may be expected. So without further examples, it is evident to the most casual observer that we are all instinctively familiar, to a greater or less degree, with the demands of this great law of correlation. The artist's success depends upon the extent of his knowledge of it. The botanist esteems it a guide in his investigations. The comparative anatomist regards it as a fundamental principle. The scientist manifests his appreciation of its importance in every branch of research. To the dentist, the extent of its recognition determines his status as a mere mechanic, or an artist.

A broad, square face, or an oval one; a large coarse featured man, or a delicately organized woman; a miss of eighteen, or a matron of fifty; a brunette or a blonde—these and other varieties present as many different types of teeth; in size, shape, color, density, etc. When teeth, correlated in their characteristics to those whom nature assigns to one class, are inserted in the mouth of one whose physical organization demands a different class, the effect cannot be otherwise than displeasing to the eye. This is true whether the observer be skilled in perception, or intuitively recognizes the lack of harmony without understanding the cause. A careful observation and record of these distinguishing characteristics of correlations would go far toward establishing prosthetic and esthetic dentistry as an exact science. There is a rich field thus opened; and as worthy of culture as those which are attracting so many to microscopic and other investigations of the tissues; an opportunity as promising as that which incites others to perfection in structural prosthetics; and a reward in professional status and pecuniary remuneration, no less than that which is accorded to efficiency in any other branch of practice.

Theoretically, dentistry is a science and an art. Practically to a very great extent it has been empiricism in place of science, and bungling mechanism in place of art. Nevertheless it has established its claims to be a science by its investigations, and by its organized system of practice; but as an art capable of taking rank as one of the fine arts it seldom finds an advocate, and still more seldom a practitioner. The dental surgeon assumes for his depart-

ment a position of superiority, and consigns the other to the workshop, where the only idea of art comprehends ordinary mechanics. As a consequence, artistic dentistry has never risen, except in rare individual cases, to anything above mechanical dentistry, and the very term by which the department is known is used as one of reproach. In every assemblage, public or private, we see displayed the disgraceful productions of these dental mechanics. It becomes a serious question, whether the art of dentistry, aside from some methods of operating on the natural teeth, has with all the inventions and improvements of the last decade, made the advance that might be expected. The operative department has assumed to be the department par excellence and we see the results in the education of the new professional generation, which is inclined to ignore knowledge of prosthetic dentistry as unworthy its talents; not realizing that a mastery of all the elements of prosthetic dentistry will do more to perfect skill in operative dentistry than any other course that could be pursued.

It can be demonstrated beyond a doubt that these ignored branches are capable of high idealization, taking rank with sculpture and other branches of fine art; capable of appealing, though perhaps in a more limited manner, to the same sentiments and emotions, and requiring for their expression the identical talent and imagination which characterize the sister arts. With the ancient Greeks, all works which exhibited skill were called works of art, and to the present day the term Art, in its broad signification, is applied to every skillful performance, physical or intellectual. In this sense, music, poetry, painting, sculpture, architecture, dancing, oratory, medicine and surgery are likewise arts.

In this broad sense every operation in dentistry is an art. But as the arts have multiplied, terms of distinction have become necessary; as fine arts and mechanic arts, with all their subdivisions. All that minister to the esthetic sense, stimulating the imagination, belong to the fine arts; all that contribute to the physical comfort, and the utilitarian progress of mankind, are classed as mechanic arts.

The mechanic arts may demand consummate skill for their execution; they may require for their development rare inventive faculties, and their combinations of mechanical principles and powers may be truly wonderful; but their individual works require

but little effort of the brain in their reproduction. Training in skillful manual labor, without the capacity to originate a single new idea, is the most that is required. The laws which govern their reproduction are those of mathematics, and to be able to copy a given form with exactness is the sum of the talent required. They may be directly of more practical value to mankind, but they make no appeal to the finer emotions of being. In all that excites the imagination, that calls into action the affections, or leads the mind away from the contemplation of the material and sensual, they are wanting.

The ideal arts on the contrary furnish this gratification, and wheresoever art falls short of this requirement it can make no higher claims than that of mechanical skill.

In that common and every-day operation in dental practice, called "taking the bite," particularly when there is an entire upper and lower denture to be supplied, there is required for its success a talent far greater than that exercised by the sculptor upon the same limited locality. Aside from the inherent good taste, or appreciation of the beautiful, on the part of the operator, there must be some knowledge of physiognomy, of facial expression, of the harmonious relations of one feature with another, and of symmetrical proportions; besides the judgment required to decide upon the best method for purposes of utility. All the details in making an artificial denture, such as taking the impression, making the casts, etc., are purely mechanical processes. All these may be perfectly carried out by one who has no appreciation whatever of the beautiful, of harmonious proportions, colors, or sounds; but in the process of taking the bite, none but an artist can go through its various stages intelligently and successfully.

Dental practice, by an inherent law and by common consent, is divided in the main into two departments; one commonly termed the "operative" or "surgical," which is made to include all efforts for the preservation of the natural teeth, and all surgical operations in the buccal cavity; the other called "mechanical" or "prosthetic" (the last term much to be preferred), includes the making of all appliances for the correction of deformities of the buccal cavity, but principally the construction and insertion of artificial teeth. In the practice of operative dentistry, as has been before intimated, there has grown up an unwarrantable assumption that all that is

refined and cultured, all that is worthy the exercise of our highest aspirations in the pursuit of our profession, is to be found in this department; and mere mechanics, wholly unqualified by education in science and art, were deemed capable of practicing the other. The one procedure in operative dentistry, which requires a talent and skill equal to the prosthetic arts is the introduction of fillings; and this skill is mere manual dexterity, guided by good judgment; its highest achievements at the present day are in the so-called contour fillings, in which an attempt is made to restore form.

Every tooth has an individual character and expression, not only in harmony with every other in the same mouth, but by the same natural law, it is, if in a normal condition, in harmony with the features and character of the creature, be it animal or man. These physical characteristics are so marked and prominent that the merest novice has no difficulty, as a rule, in locating any human tooth that has been removed from its fellows; and yet we often fail in our attempts at restoration. If a cast were taken of the restorations we usually make, and examined separately, how few would be able to identify them as being portions of any tooth! The cusps, the fissures, and the easy graceful outlines, and so much that mark the individual teeth are wanting. With the same portion of a natural tooth, even duplicated in another material, as a perfect copy in plaster, there would be no hesitation in identifying its locality with a tolerable certainty; but a cast taken of many a restoration would not be suspected of its original application.

The skill, therefore, exercised in every operation on the natural teeth is purely mechanical, and in esthetic culture bears no comparison with its associated department. No performance of the dentist can make any pretension to be a fine art, separate and distinct from all others; but as a subdivision or specialty of one of the arts, prosthetic dentistry is entitled to a consideration which it has not yet received.

Prosthetic dentistry, as an art, is a department of sculpture. Form in individual members, form in grouping and arrangement, and form as a medium of expression, are equally the distinguishing characteristics of both sculpture and dentistry. Every effort of the brain in the production of a statue is spent upon the clay model. It is this which the artist studies, and as he knows that every variation of the form changes the expression and that expression is a key to

the character, so does he bend with all earnestness to every detail, building up here and depressing there, swelling out this muscle and relaxing that until in satisfaction his work is consummated. This model in clay is the end of the artist's labor; the mechanic now takes it out of his hands, and every succeeding operation, until it appears the finished marble is one of mechanical skill only. In like manner, the conception and execution of a properly devised artificial denture admits of the work of the artist and of the mechanic, with the line as distinctly drawn.

In the construction of an artificial denture everything that relates to its appearance belongs to art, everything that affects its utility is controlled by mechanism. It is not only possible, therefore, but very common to see artificial teeth that are worn with great comfort, and may be as serviceable as any that can be made, and yet devoid of every element of true art. The adaptation to the jaws, and the articulating for masticating purposes, in these days of plastic materials, involve no skill beyond that possessed by many a mechanic; but the form and color of the teeth selected, their arrangement with each other, and the adaptation of the whole to the demands of the unimpaired features, present an appearance which is a grim satire upon dentistry as an art.

It is somewhat surprising that the manufacturers, in a few instances, have produced such admirable imitations of nature as can now be found in the market, when the demand for their production has come from a class of men who were, to a considerable extent, devoid of esthetic culture. Taking the profession as a whole, the few manufacturers have probably in this respect been the educators rather than the followers. This is evidently reversing the natural order of things. Manufacturers are but commercial men governed by the laws of trade, and it is a sad commentary upon a profession of the pretensions of dentistry that a trade which cares to supply only that which is demanded should have the credit of teaching a profession its own wants. Manufacturers make what will sell, and it is not to be wondered at that the market is well supplied with inferior productions, so long as there is a sale for them. But it is to be wondered at that members of the dental profession who are brought into daily contact with the natural teeth, and should be distinguished for their good taste, should be such superficial observers as not to detect the inferiority.

The central thought of this paper is correlation or harmony of parts. The study of this thought calls for a more thorough understanding, a keener perception and a higher appreciation of the possibilities of esthetics as applied to dentistry, and especially prosthetic dentistry.

The difference between man and man in respect to dental and facial appearances has, by various observers, been attributed to a variety of causes and influences. Among these temperament and racial characteristics have been the bases upon which classifications have been formed.

It has been questioned whether the classification of individuals according to temperament is in practice worthy the importance that some writers assume for it, the substitute offered being a classification by race as more permanent and practicable.

Among the principal racial characteristics, the color of the skin is especially distinctive. The arrangement and structure of the hair are also distinctive of race. The shape of the skull, the general contour of the face, the prominent malar bones and the position of the jaws all have recognized importance.

These and other variations, however well defined they may appear to be, are probably of little more value than the grouping by temperaments, as race crossing and constant intermixture, and climatic influence, present wide deviations from a standard.

In seeking for something fundamental upon which to form a classification of temperaments, Dr. Hutchinson says: "Are we not obliged to confess that we have but little to guide us in a classification, excepting the conditions which go to make up what we mean by complexion?" In complexion we include the color of the hair and eyes, the state of the skin as regards thickness, thinness, or transparency, and the various degrees of freedom of distribution of blood in the capillaries of the face. It is easy to apply with tolerable accuracy such words as blonde, fair, dark, sallow, pale, florid, clear, and the like; and these and many others are applicable to complexion. Temperament, however, although to a large extent confessedly indicated by complexion, is generally held to include something more. If it did not we should find it a poor basis upon which to build a knowledge of the vital peculiarities of the individual. What, then, have we to which we can make appeal? We may examine a man's features, note the size of his bones, the shape

of his jaws, the brilliancy of his eye, the coarseness or fineness of his hair, his stature, his muscularity, his abundance or otherwise of cellular tissue or fat; but in observing all these things we must bear in mind that some of them are simply peculiarities of family or of race, and have little or nothing to do with health, while others are conditions which may vary much at different periods during the same life.

Temperament concerns only the original organization of individuals. Different temperaments, when most strongly marked, will often exhibit some special feature to an unhealthy condition, but they do not in themselves comprehend any peculiar tendency to disease, consequently are perfectly in keeping with a healthy condition.

Diathesis implies a predisposition to certain diseases which may be inherited or acquired.

Temperament, then, really refers to a physiological condition, while diathesis refers to a pathological condition.

Idiosyncrasy applies to any peculiarity independent of temperament or diathesis.

In proceeding, then, the first step will be to decide upon the profile. This is not only primary in the order of the work, but it is of primary importance. It is the central point around which all the modeling revolves, and becomes the standard which governs all the other features. The profile well chosen, the other features will be made to harmonize with it, and according to the profile will correspond in form the beauty of all the other features. No face is ever ugly where the profile is beautiful, and no face can be made beautiful where the profile is ugly. An outline can be determined better by having some standard of beauty in mind as an ideal toward which we are working. This idea of a standard, or typical face, is not a mere whim of the fancy, which allows each individual to select, construct or adapt such a one as his refined or perverted taste might choose, but it is one which belongs to a perfectly balanced intellectual and physical head, one which in its elements and characteristics is not uncommon in nature at the present day, and one which existed and has been accepted as such from the earliest historic times.

The construction of this ideal head or face has been reduced to a system and is governed by a canon, which has remained with but little variation from time to time for a period of over four thousand years. On the monuments of Egypt there is such a canon

recorded in stone, which gives the proportions of the human system externally, as then accepted. From that day to the present there have been proposed probably a hundred systems. Nearly every artist of renown, from Polycletus, Michael Angelo, and Leonardo de Vinci down to our contemporaries, Page and Story, has suggested slight variations. But through all this criticism of the whole figure, the proportions of the individual features of the face and head have remained substantially unchanged.

The following system for drawing the profile head is taken from Wiegall's *Art of Figure-Drawing*. Fig. 333.

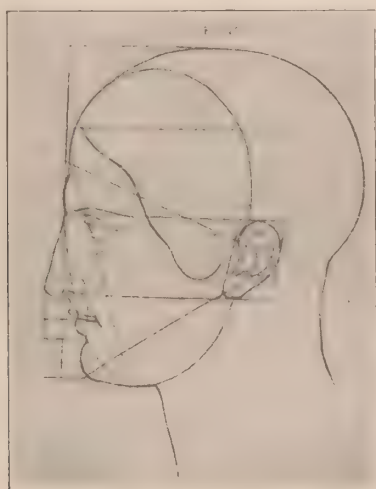


Fig. 333.

First, draw a vertical line, equal in length to the height of the intended head, and then draw two straight lines as right angles to it at its extremities; these two horizontal lines will touch the top of the head and the lowest point of the chin respectively. Divide the vertical line into four equal portions.

The first portion marks the vertical distance between the top of the head and the front roots of the hair.

The second, that from the roots of the hair to the root of the nose, between the eyes.

The third, the length from thence to the bottom of the nose.

The fourth, that from the bottom of the nose to the bottom of the chin.

Bisect this fourth portion and the point of bisection determines the lower point of the lower lip.

Again bisect the upper half of this fourth portion, and the lower portion determines the thickness of the lower lip and the upper portion determines the thickness of the upper lip. The lower half of this fourth portion determines the thickness of the chin.

These points being determined on the vertical line, next draw between the horizontal lines, but touching only the lower one, an oval, the larger diameter of which, being vertical, is to be equal to the length of the vertical line from its top to the point marking the commencement of the lower lip and its lesser diameter equal to three-fourths of the larger, and let it be placed so that the extremity of the lesser diameter may touch the vertical line a little above the point marked for the root of the nose. If this oval be carefully drawn, in its course it will pass somewhat behind the front opening of the mouth and the middle of the upper lip and through the commencement of the chin; it will determine the angle of the lower jaw, but not its course, and it will pass through the center of the ear.

The projection of the nose before the vertical line is about equal to the distance from the bottom of the nose, where it intersects the vertical to the opening of the mouth.

The vertical line divides the nose equally, that is, the width of the wing of the nose is equal to its projection in front of the vertical line.

If a straight line, parallel to the vertical, be drawn somewhat behind the wing of the nose, and intersecting the oval below the under lip, the point of intersection is the commencement of the chin.

The length of the mouth is equal and parallel to the projection of the nose before the face.

The length of the ear is equal to that of the nose, and its position is found by its center being in the oval, distant at the length of two noses from the facial line. Its arrangement is parallel with the nose and equidistant from the top of the head.

The highest part of the head lies immediately over the top of the ear.

A line drawn from the middle of the forehead to the middle of the chin will give the inclination of the eye, the position of which

is further determined by the top of the eyelid being opposite the root of the nose. And if upon the straight line, drawn from the middle of the back of the ear to the middle of the forehead, an equilateral triangle be drawn, its vertex determines the point of the chin.

A comparison of a few leading types with this ideal profile will enable us to make a better application of the knowledge to the practice of dentistry.

Fig. No. 335 is a drawing of the head of the Apollo Belvidere, a master piece of Greek art, which has been accepted as a standard of male beauty for hundreds of years. This is a portrayal of the



Fig. 335.

Fig. 336.

highest type of physical rather than of intellectual beauty. You will note that the general line of the forehead and nose is the same, and it is this line that forms the distinctive characteristic of the Grecian profile. But the parts to which special attention is called are the nose, mouth and chin. None of these features will admit, of any material modification without detracting from their beauty. Fuseli, a celebrated lecturer on art has said, "Shorten the nose of the Apollo by but the tenth of an inch, and the god is destroyed." Observe, therefore, the relation that the nose bears to the upper lip, and also the relation of the upper to the lower. The nostrils take the general direction of the mouth; were they to be raised at their posterior boundary, it would give the face a sneering and contemptuous look; or, were they drawn down, it would give a surly and morose expression. The relative proportions of the features are

substantially the same as those adapted by all artists. The chief elements of beauty are, a short, finely curved and prominent upper lip; a full, round, but less prominent lower lip; and a strongly marked depression at the base of the lower lip, giving roundness and character to the chin.

Fig. No. 336 is that of another Grecian divinity, a head of Medusa. The analysis of this profile shows that it possesses the same general characteristics; and these characteristics of the lower part of the face are elements of beauty wherever found. Thus, while at the present day the pure Greek type is very rarely seen,



Fig. 337.

Fig. 338.

we nevertheless do see, in all handsome profiles, very much the same outline in the lower half of the face that has been indicated; the variation being in the upper half of the face and not in the lower.

Fig. No. 337 is another type of profile of not uncommon occurrence. This is described as the American type, because it is quite as universal as any other type which is distinctive, and which possesses the elements of beauty. The proportions are much the same as in the preceding illustrations, and to a considerable extent, the characteristics of beauty in the lower part of the face are the same.

Fig. No. 338 shows the same face some months after the loss of the upper and lower teeth, and here we mark the beginning of the deformity which it is our duty to remedy. The countenance is

deformed, the alveolar processes more or less absorbed, there are wasted and unsupported muscles, sunken cheeks and lips, and a flattened nose whose cartilaginous portion has lost its hereditary character, the nostrils are drawn down, and the whole line of beauty in the lower part of the face is gone.

Fig. 339 is another profile of the same face. Here is exhibited that wonderful transformation from youth and beauty to age and ugliness. The changes that are shown in the second picture, are still more strikingly developed in this one. This picture shows the face shortened a quarter of an inch in the life size, and



Fig. 339.

this limited change throws the whole out of balance. It is now in the power of the dentist to remodel this face and again restore the correspondence between the lower half and the upper.

In contrast now, let us examine one of the ugly developments of nature, and one in which, when the change we have been considering takes place, and which we call deformity, we find is really a step toward comeliness.

Fig. 340, at first glance this face seems to have hardly a redeeming feature; and yet when analyzed, it is only the lower half of the face that is decidedly ugly. It is only the cartilaginous and movable part of the nose, together with the two lips, which give this beastly look.

Fig. 341 shows the result of treatment. The lower end of the

nose has been depressed, the nostrils raised, the lips shortened and retracted, and the face shortened and improved by raising and advancing the chin.



Fig. 340.

Fig. 341.



Fig. 2.

Fig. 2 (Dr. Willett) shows lack of development in superior maxillary region. The mandible is normal. The occlusion of the molar teeth is normal.

Fig. 3 shows the result of treatment. Development of superior maxillary region.

Fig. 4. Casts of the teeth before and after treatment.

Fig. 943, Arch of the Bilious temperament. From cuspid to cuspid it is almost flat. The roof of the mouth is high and almost square.



Fig. 3.

Fig. 946, Arch of the Sanguine temperament. It is horse-shoe in shape. The roof is high and semicircular.



Fig. 4.

Fig. 949, Arch of the Nervous temperament. It is pointed. The roof of the mouth partakes of the same curve as the arch.

Fig. 952, Arch of the Lymphatic temperament. It is almost semicircular in its outline. The roof is flat and low.

Fig. I, This figure is taken from an English work on The Theory of Beauty, by Mme. Schimmelpenninck, published in 1815,

and is valuable as an analysis of contour. It is apparent that the geometrical figures grossly describe all forms of faces and heads and that harmony in any individual case will require that the component features shall be of the form of its type.

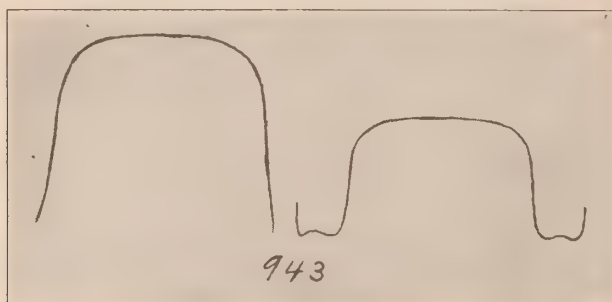


Fig. 943.

Fig. 5, Dr. Prothero has reduced the basic temperaments to four, and his classification is doubtless the simplest and best of the many that have been advocated. While it must be borne in mind that the types are ideal, all sorts of variations being the rule, yet

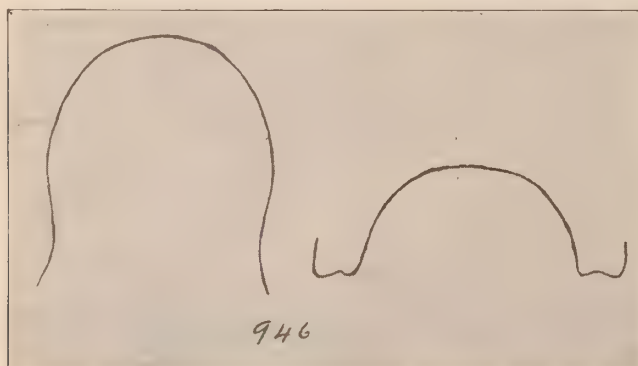


Fig. 946.

to those working along these lines the table is of importance and should be committed to memory.

In the study of human faces, the student of nature will find new and pleasing wonders continually; and, to carry out the law of harmony, his highest powers of discrimination will be in constant requisition. He will find, to his surprise, that what might be

termed mechanical symmetry is lacking in every face. So accustomed do we become to the general configuration of the human head, that we rarely view it critically. A close comparison of one side with the other of almost any face will detect grave departures from uniformity. A straight line from the center of the forehead

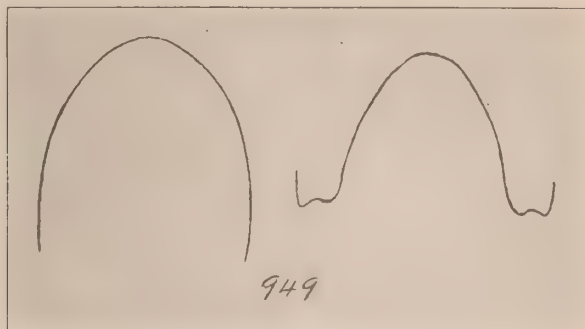


Fig. 949.

to the center of the chin will not necessarily bisect the nose, showing that the median line is not a straight line, but a curve. Neither the eyes nor the eyebrows will occupy the same angle to the median line; one side will be higher than the other, and the same is true

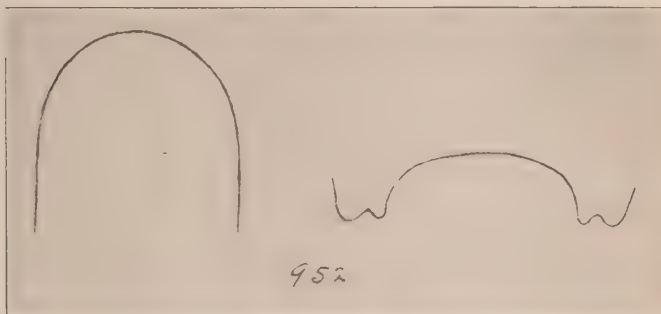


Fig. 952.

of the mouth. The distance from the corner of the mouth to the outward corner of the eye will not measure the same on both sides. The horizontal circumference of the skull being ovoid, the face does not occupy the precise front, it being longer from the anterior median line to the posterior median line on one side than the other. By such observation we may learn that a slight variation in the

fullness of the cheeks may harmonize better with the surrounding features.

The beneficial influences upon the mind of being fully impressed with an ideal standard are not inconsiderable. It becomes a great help in the determination of any type, or when adapted to any given case. With the mind thoroughly conversant with any given standard of excellence, it becomes very easy, by the laws of the association of ideas, to make or select teeth with such deviations as may be desirable. It will be remembered that the most pleasing forms

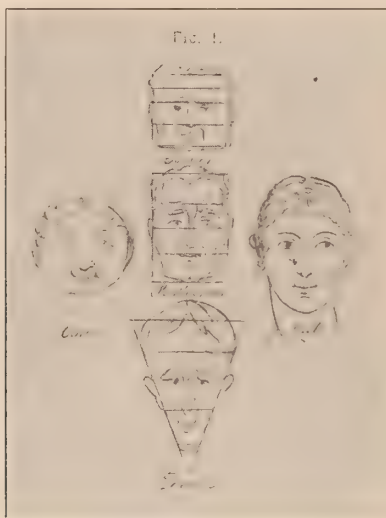


Fig. 1.

in nature are those with the softest and most graceful outlines; hard and angular forms do not give pleasure, except by contrast.

Dr. Holmes says all parts of the face doubtless have their fixed relations to each other and to the character of the person to whom the face belongs. But there is one feature and especially one part of that feature, which more than any other facial sign reveals the nature of the individual. That feature is the mouth, and the portion referred to is the corner. A circle of half an inch radius, having its center at the junction of the two lips, will indicate the chief focus of the expression.

All artists and physiognomists agree that the mouth presents a

greater variety of expressions than any other feature. In portrait-sculpture the mouth is the feature of all others for denoting expression. Neither the eyes, nose, forehead, ears nor chin, nor all combined, have the power for conveying that of which the mouth is capable. It speaks ever without utterance, of every emotion of the heart; love, anger, pride, scorn, contempt, joy and sorrow, all find expression upon the mouth.

These various movements around the angle of the mouth require careful observation for their full comprehension; and it

CHARACTERISTICS OF THE MOUTH				
Complexion	Eyes	Hair	Complexion	Shape
<i>European</i>	Pale blue or gray	Fine and silky, not so abundant	Pallid, opaque, or ruddy, cold tone	Poorly shaped, broad and flat.
<i>Spanish</i>	Blue, brilliant and expressive	Dark and abundant, straight, not so abundant	Cream yellow, warmer at neck	Well proportioned, curved out, rounded
<i>American</i>	Light gray or blue, rest less, often richly brilliant	Fine, light, and soft	Pearl gray or blue tinge	Large, curved, well rounded
<i>African</i>	Black or brown, smooth and piercing	Coarse, dark, often black, and abundant	Strong, intense yellow	Small, long and angular

Fig. 5.

must have already become apparent that this knowledge is of vital importance to him who would succeed in the art of dentistry, and that without it, the consummation of excellence can never be obtained.

These remarks upon the features and restoration of expression must be regarded as only suggestive. Definite rules cannot be given; the art can only be acquired by observation and experience. This branch of esthetics must, of necessity, be worked out by every one for himself. He will succeed or fail just in proportion as he has the ability to observe the hundreds of models which are constantly before him; and as he has the further and rarer ability to apply his observation.

In conclusion, the essayist wishes to state that this paper is largely a compilation. Being interested, he has read much along these lines and has taken freely of ideas and words from various sources, and has presented the result in this form, all the while indulging the hope that the interest of others will be aroused.

PAINLESS DENTISTRY.*

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"The only devil is fear" says Elbert Hubbard, and Hubbard is, by many, considered a better authority on devils than anything else, and I think a large portion of the dental profession would be willing to concede that Hubbard has tagged the most important "devil," if not the only one. Fear is always begotten of ignorance, it lurks in the shadows of the unknown, it feasts on darkness and superstition, it revels in sorcery and witchcraft, it binds the little soul to apprehension and suffering, it obstructs the sunlight of progress and hope, and renders its victim susceptible to all the ills of humanity. Is it cause for wonder, then, that all who practice the healing art are seeking a means of eliminating fear?

Any normal person, we know, can stand without difficulty the pain necessary to any ordinary dental operation, but having seen the delicate little girl, the burly swain and the bully turn pale and even faint on entering a dental office for the first time, it is a temptation to try to meet it with some attempt at deception, such as a sign "Painless Denistry," or some means of alleviating the pain, or at least allaying the fear. It appeals to us so strongly that we might say that "Painless Dentistry" is the young man's aspiration, the peoples' panacea, and the fool's paradise of the profession. Some of us try deception, some alleviation, and most of us, both. And I want to add, that any honorable means to gain the confidence and allay the fear, may have its justification at times.

I can not, nor can any man, recount all nor more than a small part of the means resorted to, to alleviate the pain or apprehension attendant upon dental operations, such as a "counter pain" produced by grabbing a fellow by the nape of the neck or treading on his corns, to divert his attention.

*Read before the Illinois State Dental Society.

Probably the first successful attempt in the drug world aside from general anesthesia, came with the discovery of "cocain hydrochlorate." This ushered in a new world of operation, in minor surgery; we applied it topically, we injected it hypodermically, with greater or less success, then some one thought of the scheme of galvanic induction as a means of procuring local anesthesia and "cataphoresis" was ushered in, with a lot of expensive paraphernalia. Many wonderful and successful operations were performed through this means, only to have the patients return later with destroyed pulps, due perhaps to irritation of drug and current, or perhaps due to the painlessness and too close proximity to the pulp by the operator. The most successful operations, I believe, were where the pulps had died previous to the operation. We still use cocain under pressure for anesthetizing live pulps for immediate extirpation. Then came Eucaïn A and B, and Neurocain, Novocain, and Urea and Quinin Hydrochlorid; each has had its fling.

The drug specialty had not subsided when almost forgotten "Mesmerism" under the modern name of "Hypnotism" came in to claim a place. Mechanical devices for concentrating the gaze, or whirling the individual were invented. Others did the work by deep breathing, and wonders were accomplished.

Now "Analgesia" is claiming attention and a new line of appliances for administering nitrous oxid and oxygen, somnoform, ethyl chlorid, chloroform, or ether, in such quantities as to dull sensibility, without producing profound anesthesia, is the line of action and there are many enthusiastic followers.

All of these have their place, all are useful and all may be injurious, and with all of them there is conceded to be a psychological effect quite as important as any other influence, and so we have many who push them all aside and resort to some prayer or incantation, or appeal to some healer for absent treatment, or proclaim the "power of thought," some claiming that "fear and pain are errors of mortal mind," while others hold the thought of the "dominance of mind over matter."

I believe the careful, conscientious practitioner feels that he can do a better operation, particularly where delicate manipulation is a factor, as in most cavity preparations, if he has the co-operation of the patient, with all sensibilities alert. He feels the need of this guiding sense in approaching a live pulp, yet avoiding it, and

preserving it. To remove the sensibillites of the patient imperils the pulp. And so I would draw the line for anesthesia at the point where the operation was upon a live tooth in which it is desirable to preserve the life; the closer you get to the danger line, the less you want anesthesia; the more the patient needs it, the less the operator wants it. There is, however, one class of cavities where this rule will not apply; namely, small cervical margin cavities, which are often very sensitive and not near the pulp.

Everyone admits that most of the suffering attendant upon dental operations is from apprehension, due to lack of knowledge of the real requirements of the case or the lack of confidence in the operator, and this brings me to the real purpose of the paper,—how best to allay the patient's apprehension; whether to educate him as to details of the operation, or gain his confidence in some other way.

I am going to leave the question of educating the patient in details of operation to the discussion, and offer a few suggestions as to means of allaying apprehension in the patient, and I realize that this opens up all the possible phases of human nature, in both patient and operator, and what works admirably with one will fail with another. An appeal to a boy's courage and grit will work satisfactorily with most boys, but is poor work on a majority of girls, with whom a little gentle thoughtfulness counts far more. With either, beginning with cleaning the teeth and doing the easy thing until an acquaintance is established, the necessary thing will come easily. One of the essentials is to find the interesting thing and keep the mind engaged: "Do you belong to the 'Boy Scouts?'" "Are you in the 'fly contest?'" or "Are you interested in wireless telegraphy, or manual training, or fishing, or swimming, or the street fair, or flying machines, or automobiles?" And it's mighty interesting when you strike the right thing, to find out how much he knows. And it behooves us to know enough to ask intelligent questions. And we ought to know a lot about birds and insects and plants and flowers and mechanics, in order to add a little information or arouse a little desire to know, for this constitutes the basis of education, and we should never miss an opportunity to sow the seed of desire to know in the young mind.

As for rendering operations comfortable for adults, I know of no position in the world where a liberal education along every

line will count for so much. The first essential, however, is to decide in each given operation just what you want to do and how you are going to do it; then do it quickly and with decision. A patient will stand real hurt for a moment if that finishes it, but they hate to have us come back to that "tender place" repeatedly, for instance, opening a proximo-occlusal cavity in bicuspid or molar, take a small "gem stone" wheel and wet it and cut through the enamel, then follow with an inverted cone or cross cut fissure bur sharp, a chisel will usually finish outlining the cavity, all done in about two minutes, and this is the part which disturbs the patient most.

In grinding down a tooth or root, don't try to do it without a stream of water playing on the stone. In ordinary excavating, sharp burs are the main secret of comfort, as dull ones produce friction and heat.

As time goes on, our patients come to know us, or go to some one else who pleases them better, and there are thousands of reasons for this, but the principal one is temperamental; compatability or incompatibility. We know that the other man has done nothing to try to get them, but they have gone to him. And it takes quite a good deal of generosity to let them do so without a pang.

Our problem is with the one who stays with us, how to render comfortable and satisfactory service; and granted that each man knows just how best to do the work, the problem resolves itself into "how to make it comfortable?" And this, I believe, is essentially the mental attitude of both operator and patient; the operator's confidence that he knows just how to do it, is imparted to the patient in the same way that the confident horseman imparts knowledge to the horse, that he is master; the slightest nervousness is imparted just as quickly.

One essential to confidence is a friendly interest in your patient, quite apart from the remuneration, which considers only the patient's welfare and conscientious service.

How are we going to divert the mind of the patient? Here I may differ decidedly from others, for in the severest hurt I believe it is foolish to try. The thing to do is to firmly, carefully and persistently push that part to completion, giving the patient helpful suggestion—with frankness, not deception—saying "Now just a moment" (cutting fast at the same time) "that's over." "Now just a

little in this angle." "Fine!" "This won't hurt; I am going to trim the enamel." "Just a little at this margin—there, it's all done!" Then immediately change the thought, and here is where wisdom plays an important part. If we are wise, we will, during our preliminary work, have found what interests our patient and takes the whole attention. If we try to divert attention during severe hurt it makes the patient conscious that we are trying to "flim-flam" him, and no one likes that. Some may proclaim pain an "error of mortal mind,"—I have no objection—but to me it seems much better to recognize it as one of the sensations to be avoided by preventing the cause. Let's recognize it as good because it is a warning—and profit by the experience.

All life is a series of lessons, and while they may seem hard at the time, we usually live long enough to determine the usefulness of each one of the experiences; and, to me, the "getting the most out of life" is looking for the good in each experience which I have and it is not usually difficult to find; but I sometimes have to wait for it to dawn upon me.

And just so with having teeth fixed; probably some day we will know how to prevent the necessity, and a question from the patient may draw out this very thing, to divert the mind when the painful work is done. And a discussion of this, is good mental exercise; "whether the 'denial of pain' is not side stepping the responsibilities of my own acts, instead of coming up squarely and taking the consequences."

Something may suggest politics as the diversion, and we should know something of the status of the political situations. It may be economics, and we should know something of every phase of economics and the various propaganda for making equitable economic conditions, such as anarchy, socialism, single tax, eugenics, equal suffrage, prohibition, etc. It may be music, and we should know something of operas, composers, etc. It may be religion, and we should know something of every religious sect, even to Mohammedanism and the latest, Baha-ism. It may be science, and we should know what is going on, even to the latest by Com-te; namely, "Spontaneous Generation." It may be mechanics, and we should know all that is possible of principles, and some details, of the late things in autos, flying machines, naval equipment, etc. It may be travel, and we should know all of our own country that is pos-

sible and try to know something abroad. It may be baseball, or tennis, or golf, and we should know much about play. It may be engineering, and we ought to know somewhat in detail of the Panama Canal, the great aqueduct under the Hudson river, to carry water from the Catskills to New York City, of the wonderful undertaking of Los Angeles in spending more than thirty millions of dollars bringing water 240 miles through mountains and over deserts. And so I might go on indefinitely as to what we ought to know; there is actually no limit. But we ought to know particularly of the work in our own line; of the work of Miller and Black, and more particularly of the work on saliva by the New York Society committee; of Michaels and Kirk, of Rose and Black. We ought to know especially of the recent work for education and prevention; particularly of the work of Dr. Ebersole, of Cleveland. And then, too, we ought to have a fund of good stories, clean and fresh and witty; they are very restful if not overdone. Change of thought is the secret of rest, and in proportion as you have the ability to suggest and interest, so you are able to rest your patient and relieve the fatigue of the operation. Your patients frequently tell you as mine do me; "Doctor, I have enjoyed this visit very much," or "Doctor, you haven't hurt me a bit," or, "Doctor, you have hurt me very little." And it is due to this rest, rather than to the thing suggested. And now I am going to tell you my secret. Maybe you have a better plan,—if so, I should like to know it. It is this: when I do not know of some especially interesting subject to my patient, I just think aloud. I try every day to read something worth while, something I want to know, and most people are desirous of knowing, and so I tell them of it as I think it over, such as Prof. Osburn Reynolds' "Theory of Gravitation," or London *Lancet* story of "Age." And there are few adults who won't be caught and held and rested.

In conclusion, I will say that painless dentistry is not painless; it is only rendered easy by knowing how to do it and how to take the mind from the distress of the thing. And to the younger men I will say, that as time goes on, the process of selection will bring patients who understand you. No man can do all the work, so don't feel badly to see the other fellow succeed, and if he is courteous and kind there will soon be nothing left of fear and apprehension and pain.

ORAL PROPHYLAXIS.
ITS PLACE AND ITS IMPORTANCE IN DENTAL
PRACTISE.*

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By way of preface allow me to say it is not my purpose to present to this society any Munchausen tales or Cervantes romances, neither the hallucinations of some dental Don Quixote in the role of mere sensationalism. I am here to study with you certain neglected conditions of the mouth and teeth, conditions that have engaged attention with increasing interest since my first presentation of them before the Washington City Dental Society on the tragic night of February 15th, 1898.

It may seem incongruous and out of harmony with the present theories of dentistry to say that teeth as commonly found in the human mouth are a menace to both health and longevity; or to put the same truth in another way, to say that the loss of all teeth from the uncared for mouth in adult life, would be a safeguard against many systemic diseases and markedly lengthen the average of human life.

These enunciations may appear sensational and yet they give but a hint to actual conditions that exist in human mouths on every hand. This paper is written for dentistry and medicine alike in the hope of hastening the recognition and correction of these untoward conditions.

Dentistry with all its scientific investigations has accomplished comparatively little in averting or correcting the adverse mouth conditions of humanity. However humiliating it may be, we believe the charge may be made and sustained that more disease and suffering is caused through ignorant, sometimes malicious dental manipulation than good accomplished by an educated, skilled practise. It may seem somewhat pessimistic to say that dentistry is not markedly advancing along educational or helpful lines and yet it is true. Using a military figure, the profession of dentistry presents to-day as on a kind of dress parade; it has movement, but

*Read before the Illinois State Dental Society, Peoria, Ill., May 15, 1913.

it is as the movement of "marking time." It exhibits but little change of base from year to year or decade to decade.

No real advancement was made by dental science in the line of prevention until the promulgation of the oral prophylaxis theories.

Dr. Charles H. Mayo, the eminent surgeon of Rochester, Minn., in closing his paper before the Chicago Dental Society, said, "It is evident that the next great step in medical progress in the line of preventive medicine should be made by the dentists. The question is will they do it?" The question of Dr. Mayo is pertinent. Will we do it? If we fail to move forward it will not be because there are not vast fields in dental science and dental service practically unexplored.

The dental profession is not, certainly not just now, bringing to light anything of wide application for the benefit of mankind. It is rather with slavish satisfaction worshiping instruments and office paraphernalia set out by dental supply houses, whilst it acclaims present teachings and present practise supreme.

Professor Truman, editor of the late International Dental Journal, member of the Faculty of the Dental Department of the University of Pennsylvania, regaled us not long since with an editorial on the state of the profession in general; he says: "We are floating in shallow waters; it would seem that we have not been doing all that is possible to meet changing conditions." Mark the declaration "we are floating!" not even rowing that we may get into deeper water.

It is true that theory after theory has been promulgated, process after process brought forward as improvement, but for the most part these theories and processes have been recast in the old time-worn moulds of methods, materials or manipulation.

Forced to make answer to the question, "is dentistry in any true sense conquering the diseases of the human mouth," it must say "no." Under the old regime it is not even, with commendable success, interposing a barrier to decay. There are 30,000 practitioners (some estimate 35,000) in this country alone, working ostensibly to stem the inroads of decay in human teeth. Such vast numerical strength should exert great influence for good. But is such the case? It is certainly well within bounds to say that at least half the population are entirely without knowledge or care of

the teeth, receiving no benefit from dentistry save extraction. Dental caries is prevalent to an alarming extent in the mouths of children and the youth of this country and even in greater degree in the United Kingdom. It is so prevalent that many of the laity and not a few of the medical profession have come to regard caries as the normal condition of childhood. It remains for the dental profession to dispel this erroneous impression and not less to reveal to medicine the untoward consequences of the all prevalent mouth infection in adults and children alike.

The N. Y. Times says "as a reading nation we are filling up on the husks of periodical literature." It may be said of our dental journals published almost exclusively by commercial houses as advertising media, although cultured men may be found in the editorial chairs they are often inexperienced and impractical as dentists. To a great extent they are feeding out the husks of dentistry to the profession as scientific matter.

Who could imagine from our current dental literature that the prime object of dentistry is the prevention of decay or the maintenance of health in the human mouth? If one can, let him read "Bro. Bills' letters" or listen to the words and catch the spirit of two young men who hold diplomas from schools of dentistry, one from the dental department of the University of Pennsylvania. Replying to the query, "What are you practicing dentistry for?" one said, "I am practicing dentistry to support my family and I can make more money filling teeth at \$3 apiece than I can by trying to force your methods upon people." The other said, "Oh, yes, Dr. Smith, I have no doubt this treatment of yours will stop decay, but if I stop decay of the teeth what am I going to do?" Could the implication be clearer than this that to the ordinary college graduate, dentistry is the filling of holes in teeth, for a consideration? This spirit is not individual, it is representative of a considerable class in our schools. And what shall be said of the teachings of the schools when such sentiments stand forth as the foundation of a professional career? We ask it most regretfully, has dentistry been raised through the teachings of the schools above the plane of repair of wasted tooth tissue for a price?

Has not the thought and have not the energies of dentistry centered for years upon the treatment of one condition, decay? The greatest concern has been and is, filling materials, instruments and

methods of manipulation. No adequate attention has been given to cause or prevention. Dental journals are filled with such matters as "Mending Vulcanite Plates," "The Use of the Rubber Dam," "Treatment and Filling of Roots," "Sterilization of Instruments," "Gold vs. Amalgam," "Professional Ethics vs. Patents," "Saving a Tooth 200 Years Ago," "Soapstone," "The Boss' Dream," "Ex-tention for Prevention," "Report of Committees," and a thousand other matters equally inconsequential, whilst they are without a page or line upon subjects that vitally concern the health and comfort of every class and condition of humanity, namely, the prevention of disease in and through the mouth.

Dentistry has to do with important organs in the mouth, the cavity of intake for the entire system. The mouth is the seat of many conditions which render it markedly adverse to the healthful performance of its true functions.

Has it not been demonstrated that disease is largely due to bacterial invasion? And is it not equally a matter of demonstration that the germs of systemic disease are propagated in undisturbed debris and bacterial plaques found upon and in connection with untreated teeth in the mouth? On many teeth matter may be found, alive with bacteria; abnormal secretions, excretions, sputum, pus and effete matter from inflamed mucous surfaces; gases emanating from decaying teeth and putrescent pulps, and this all at the high normal temperature of the mouth, a temperature most favorable to bacterial culture as well as conducive to rapid tooth decay. These and other inimical conditions are in the human mouth, not one hour of the day, but twenty-four hours of every day; not one day in the year, but three hundred and sixty-five days of every year. Maintenance of health in the human mouth is not only important, but it is most important.

That nation, that family, or that individual that gives the most enlightened attention to conditions of health in the mouth, independent of decayed teeth, will surely attain the better state of general health. This is the important discovery, "the next great step in medical progress" that dentistry now brings to Dr. Mayo for his consideration for the advancement of the medical profession.

One main object of this paper concerns the sources of mouth infection with a view to affording relief. It is hoped also to present in better light some of the unsettled causes of tooth decay.

Investigators, theorists, have labored in the past and are still laboring as one who beats the air, vainly searching for the cause of diseased condition of the mouth and teeth. Even tooth decay has persistently evaded all theories. Like an illusive will-o-the-wisp it has left but a luring glimmer to the investigator.

Great expectancy and eulogistic stress has been placed upon what may be called Miller's chemico-bacteriological theory of decay; but what preventive measures have come in practice in the light of these theories? If teachings have been modified to a degree by them, the old, old practice of waiting for decay and tooth filling is unchanged. Mouth infection, pyorrhea and decay are as prevalent as before these bacteriological theories were promulgated. Environmental conditions and the part tooth environment plays in decay, seems to have been overlooked in the theory that lactic acid, bacteria and their products, are the cause of decay.

Simulated decay in teeth out of their natural environment, demonstrates little of a satisfactory nature respecting causes. Forced tooth decay is but artificial decomposition, wholly unlike decay in the mouth. Teeth are the subject of a true decay only when they are in the normal menstruum and temperature of the mouth. A tooth removed from the mouth ceases all decay at once even though it may have been the subject of rapid disintegration when in the mouth. No change analogous to true tooth decay has been produced by artificial means.

Dr. Black with infinite skill and painstaking, impossible for any but a true scientist, has recently produced some screen pictures showing that decay in the enamel of teeth proceeds along different lines and in a somewhat different manner from decalcification in dentin. These pictures of Dr. Black show much more clearly than anything heretofore presented the paramount importance of the prophylaxis treatment or frequent and positive change of environment in all mouth conditions, if we would prevent decay in enamel. If I understand Dr. Black correctly, he believes the real cause of enamel decay is more an acidulated than a bacterial state of the mouth and its fluids. The pictures alluded to present very clearly the fact that environmental states alone may cause rapid disintegration and decay of the teeth or environmental states may lift the whole into complete immunity. The forces operating as the cause of caries have no *dual* relation as claimed by some. Car-

ies of the teeth is due largely if not entirely to external agencies, to tooth environment. Mouth fluids and temperature are the principal factors. Conditions of decay are thus furnished that cannot be reached by internal medication or by any prophylactic application; the *prophylaxis treatment* is the one and only logical means of prevention.

Present teachings and methods of practice in dentistry are wholly ineffective as preventives and they are quite inadequate as curatives.

In previous writings I have persistently maintained that tooth decay begins on some crown or root surface that is exposed in the fluids of the mouth and that it is strictly chargeable to adverse environmental states of the teeth. A plainly distinguishable nocturnal mucus together with stagnant acidulated mouth fluids especially manifest at night or when the mouth is at rest, are the chief factors.

Whether we regard the cause of tooth decay as simply an acidulated environment or consider it due to the action of lactic acid and bacteria the difference in the decaicification wrought by it is not material if indeed it is appreciable. Dental Science of the future will regard them as identical; as the remedy for the one is the remedy for the other; viz., frequent, forcible and complete change of environment. This is a remedy instituted and applied by the oral prophylaxis treatment and that alone. And this alone will prevent the activities of decay.

Is not dentistry then as a profession remiss in not teaching and adopting an applied and practical remedy? This brings us to the query, is there a remedy?

Tooth solution is opposed or hindered by two conditions only: (a) the composition or consolidation of enamel and dentin, (b) the vital energy interposed by a living pulp, the latter often a negligible factor. No matter what the physical state of the crown, whether it be hard or soft, alive or dead, the agents and agencies which cause decay being in the environment or surroundings of the teeth, protection from decay must depend upon the fidelity with which tooth surfaces are guarded from acidulated infection. Evidence from practical experience in support of this is abundant and unvarying.

Hence an important matter for dentistry to consider and de-

termine is, whether oral prophylaxis, understood and properly instituted, will arrest, prevent or retard decay of the teeth *in the mouth*. Theorizing from laboratory experiments will not solve this matter. Clinical observation and unprejudiced study of mouth conditions will alone do it.

Fifteen years of experimentation has abundantly demonstrated to me that while the treatment will not arrest decay that is already in progress, whether as new cavities or under imperfect fillings, the prevention of decay on surfaces where the prophylaxis treatment has been regularly maintained is absolute. It will also greatly retard the progress of decay in open cavities as well as that under old fillings.

Oral Prophylaxis is not presented as an absolute preventative of all decay nor as a panacea for all the ills of a dental practice; it has not been ground in a mortar nor specifically analyzed by a chemist, neither has it been subjected to laboratory or bacterial culture tests, but it has been given the common sense test of years of experimentation in the human mouth. It had three years of private practice test limited to a few patients before it was discussed at all in public, since then it has had fifteen years of actual clinical testing in a full dental practice. In every instance it has fully met expectations in its prevention of decay and in the remarkable restorations of diseased mouth conditions, including so-called gingivitis, chronic gum inflammations, phosphor necrosis and pyorrhea.

Discussion of the subject of oral prophylaxis seems to have centered generally upon the question of its benefits in decay and the irrelevant and circumscribed postulate "will a clean tooth decay," has had to bear the brunt of the discussion. Nothing can more clearly show a total lack of comprehension of the subject.

No teachings, past or present, emanating from either medicine or dentistry, embody or in any sense grasp the true meaning of the dual life in human teeth. There are teachings respecting the fact of a pericemental membrane on the roots of teeth, but there are no concrete or important teachings respecting the functions of this membrane. The relation which this membrane bears to the pulp of the tooth, its office in tooth conservation, the diseases to which it is subject, the relations that it bears to the usefulness of the tooth have not in the past been subjects of special observa-

tion, at least they had not until the article read before the Indianapolis Dental Society in May, 1909, on "The Sources, Distribution and Relative Importance of the Dual Life in Human Teeth." Prior to this article neither dentistry nor medicine had made this important tissue the subject of any special investigation. Little was or is known by the average practitioner respecting it.

The teachings embodied in the article mentioned lie at the very foundation of the life and health of human teeth. Discussion of the benefits of the oral prophylaxis treatment would be very incomplete without some presentation of the office work of the pericemental membrane as presented in that paper.

The so-called physiology of dentistry, all unconscious of the meaning of the dual life in teeth, has followed in the wake of general medical teachings, and persistently confined attention and study to one source of tooth life, viz: Pulp life, as though all vitality in the tooth emanated from it alone. We shall never understand dentistry in its wider meaning, dentistry that aims at the salvation of all teeth, until we recognize and grasp the significance of the dual life in teeth; the pulp life in which they originate and the pericemental life through which they are held in relationship with the jaw. It is clearly recognized that a tooth cannot spring into being without pulp life; it should also be recognized, that a tooth cannot continue long in service devoid of healthy pericemental life. The nutrition and sensation derived from the pulp is wholly distinct from and wholly independent of the life derived from the pericementum. The pulp and pericementum act conjointly in the formation and maintenance of life in every functionally perfect tooth, and maintenance of pulp life is dependent on maintenance of pericemental life, but pericemental life is in no sense dependent on the pulp life of the tooth. The pulp life may be abridged or wholly obliterated, as is often done, and that at any period in the life of an erupted tooth, and this without appreciable interference with pericemental life. How then shall we interpret the meaning of these two separate and distinct sources of life with which every tooth is endowed, both independently derived and independently maintained, and each wholly separate and distinct from the other?

Considering the matter in detail, we shall find that the life with which the pulp is endowed entirely controls the internal struc-

tures of the tooth, all of the dentin, all of the tubular and intertubular matter, and all of the enamel also. The pulp is the source of nutrition and sensation to all the tissues of the tooth, excepting only the cementum and pericementum. When the pulp life of a tooth has been destroyed, or from any cause is wanting, there is immediate, complete and *final* cessation of sensation and nutrition in all tissues of the tooth save that of the cementum and pericementum only.

In the erupted tooth there is a perfect system of enamel nutrition that is derived from the pulp operating through the dental tubules and connective tissue. The teaching that there is a special enamel membrane for enamel nutrition is purely hypothetical; it is wholly unsubstantiated by reason of physiological action.

All life, all "blood supply" to the pericementum is distributed to the cemental tissue. Except a slight, indefinite, anastomotic relation with the tubules of the dentin of the root in a tooth with a living pulp, a condition seldom appreciable, pericemental life in a tooth has no connection with its pulp life. In the destruction and extirpation of the pulp, when all decomposable matter has been removed from the pulp cavity and the root canals, there should be no disturbance of the cemental or pericemental function.

A tooth deprived of its pulp life, especially if it be in the mouth of an adult, is still a tooth in all its essentiality. The color of a young tooth may be slightly impaired, but properly treated the utility, durability and comfort of a pulpless tooth in the mouth is seldom distinguishable from a tooth with a living pulp.

Dentistry has greatly overestimated the value of the pulp life in teeth especially when these organs have reached maturity with full consolidation of dentin.

For three decades teachings have centered upon and about the *pulp life* of a tooth to the entire neglect of the far more important life in the pericementum. The result has been that thousands of mouths have been filled with pyorrheal inflammation and tens of thousands of otherwise good teeth have been hopelessly loosened, whilst doors of infection have been opened wide to many systemic diseases. Disregarding the well known fact that pulpless teeth, when properly treated, have proven comfortable, useful and enduring, immature and unobserving teachers have advocated the conservation of the tooth-pulp at all hazards.

Devitalization has been unsparingly condemned, and the "capping" of exposed pulps advocated; but with what results? These: Patients have been called to endure privation and suffering, and in a few instances even life itself has been sacrificed at the hands of dentistry, all because of the false theories and mistaken views respecting the importance of pulp-life in teeth.

It is just dawning upon a few teachers that after the crown of a tooth has been fully consolidated the tooth-pulp is not that holy unapproachable thing that past teachings have made us believe it to be. As life in the pulp may become practically obliterated through disease without injury to the pericemental life, so pulp life may be forcibly destroyed without injury to the alveolar connections of the tooth. And here just a word regarding the unique relations of a pulpless tooth.

When the pulp of a tooth is devitalized, there is presented the anomalous condition of living bone, the cementum (for the thicker layers of cementum are analogous to true bone) indissolubly united to and enveloping the dentin, which in devitalized teeth is dead tissue.

And yet the functional life of the cemental tissue is, in most instances, perfectly maintained by the pericementum; this conjunction of living and dead tissues in a pulpless tooth is unparalleled in the economy. When the decomposable pulp matter is perfectly removed from a well formed tooth-root, the function of sustentation if not nutrition, should be and is, as perfectly maintained in the cementum as in cases where the pulp-life is intact. One writer has promulgated the theory that when the pulp of a tooth is destroyed the arterial supply previously distributed to the pulp is in some mysterious way diverted to the pericementum of the root. The absurdity of this theory will hardly fail of recognition by the most superficial thinker.

Dentistry should and must awaken to a study of the relative importance of pulp and pericemental life; for the latter is most intimately associated with the health and salvation of the teeth. Some one has said that more than half the teeth that are lost are lost from diseased conditions of the external or pericemental tissues of the teeth. (This estimate is undoubtedly exaggerated.) All necrosis of these tissues begins in the pericementum and is wholly the result of local irritation. The pericementum controls only the

thin bone covering of the root which we know as the cementum, but in this it controls the most important source of life to the tooth. Dentistry has not yet generally recognized, certainly not in practice, that the important part of a tooth is not its crown, but that is the root. The cemental life of the root preserved through the pericementum, the essential part of the vitality of the tooth is preserved. If the life of the root is injured or destroyed, the indispensable life of the tooth is injured or destroyed.

Pericemental life is more important than pulp life, to just the extent that the root of a tooth is more important than the crown. What value has the crown of a tooth, however perfect it may be, unless supported by a vital, healthy root? A tooth root in the alveolus, whether supporting a crown or not, is of no value when loose through lack of cemental tissue or through disease of such tissue, or because of necrosis or absorption of the supporting structures; it is far better removed from the alveolus than standing an obstruction to mastication, a perpetual irritant and fostering septic mouth conditions.

A tooth root well formed, enveloped in living cementum and having a perfect pericemental membrane, has all the capabilities of comfort and durability that attaches to a tooth with a living pulp. Such a root has also the possibilities of complete esthetic restoration.

The oral prophylaxis treatment, as before intimated, is based upon the fact that decay in human teeth is due largely, if not entirely, to environmental conditions. It is well known, though the deductions may not have been traced, that teeth as they are erupted into the mouth present with enamel surfaces rough and unpolished and to all intents and purposes imperfect; these surfaces discolor and frequently retain infection that gathers upon them from innumerable sources. This infectious matter is acidulated, bacteria-laden and held at the dangerous temperature of 98.6°. It is disturbed and removed from tooth surface by the oral prophylaxis treatment, the only process that can certainly free the teeth from the influences of these injurious and destructive mouth fluids in which the teeth of the young especially are constantly bathed.

Forcible polishing of enamel surfaces with wood points places the teeth in a condition to more readily void the inspissated secretions, bacterial plaques and all hurtful deposits; it thus assists what

cleansing may result from mastication, as well as all efforts of the patient at self cleansing. Polishing the surfaces of teeth, not with revolving wheels or brushes (all power polishers should in all cases be rejected), but polishing with orange wood points and fine pumice, stimulates increased activity in the pulp to the great benefit of all tissues of the teeth.

It is little wonder that under present treatment, or lack of treatment, teeth decay, suffer onslaughts of pyorrhea, succumb to pericemental troubles and through necrosis of their supporting structures become loose in the alveolus and are finally extracted.

The ordinary mouth with natural teeth carries a tooth surface that may be roughly estimated at twenty to twenty-four square inches in extent, varying considerably with the size and number of the teeth. This large extent of tooth surface, from lack of care in whole or in part, is very generally in a state of virulent infection. As this surface is exposed to much of the inspired air and washed and mopped in mastication by direct contact with foods, it will be readily seen that infection is certainly carried into the pulmonary and digestive tracts from the teeth and their surroundings.

A vivid picture may be presented by considering for a moment the condition of an unwashed plate, spoon, knife and fork. Such an outfit for serving food presents scarcely more square inches of surface than an ordinary set of natural teeth.

Imagine conditions which impel or admit of serving food from a plate covered with infected mouth fluids, decomposed food remains, viscid mucoid secretions and excretions, occasional globules of pus or disengaged particles of calcic deposits, the whole impregnated with odors from tooth decay, putrescent pulp tissues, bacterially infected tooth surfaces, and other septic conditions represented in the unsanitary human mouth. In this we have a view of states and conditions presented in the oral cavity, the vestibule of life; often through ignorance, inattention and neglect, becoming a veritable vestibule of death.

The unsanitary mouth is a bar to the preservation of health and the general system is in many instances better without natural teeth in the mouth.

Digestion, assimilation, maintenance of life and health are by no means dependent on tooth mastication. Indeed there are many

cases of infectious mouth conditions where conservation of health would be better maintained without natural teeth.

It is yet to be recognized that mastication by the teeth is by no means a necessity, notwithstanding the once popular teachings of Horace Fletcher. This is fully attested in the case of convalescents and of invalids so often nourished with predigested foods or foods prepared for the stomach outside of the mouth. It is perhaps more forcibly attested by the thousands upon thousands of edentulous mouths.

If we seek out the old people of today we shall discover many with few or no natural teeth; it is a matter of general observation that they have come into a better state of health as a result of parting with all natural teeth.

Where then should the emphasis be placed on the uses of natural teeth? When fully apprehended the emphasis will not be upon the necessity for them as masticatory organs alone, but upon the pleasure they contribute adjunctively to mastication.

The comfortable unconscious use of the teeth in mastication affords a nervous aid to digestion the benefits of which far exceed any demand for the mere mechanical function of these organs.

No adequate consideration has ever been given by either medicine or dentistry to the infection in the human mouth consequent upon the presence of natural teeth. The adverse local consequences, decay of the teeth, gum recession, alveolar necrosis, mouth pyorrhea and final loss of the teeth, are of lesser importance in comparison with evils that result from systemic disturbances due to infection from natural teeth conditions. The knowledge of these conditions intelligently set forth would find receptiveness in the masses of the people that would astonish the opponents of these theories and render incalculable benefit to general health. When instructed, patients are quick to see and appreciate the imminent dangers of systemic infection due to septic states of untreated teeth. The liveliest interest has been awakened in patients, and many have been stirred to earnest co-operation in efforts for the immunizing and betterment of teeth by this system of oral prophylaxis.

The technique of oral prophylaxis has not been studied with the care its importance demands, as a consequence it is not understood by many who aim to be friendly to it. Too hastily regarding

it as merely a so-called "tooth cleaning" operation, methods and measures have been advocated and used, that render the attainment of ultimate or satisfactory ends impossible. However the technique of this operation, not easily defined or described, may with proper attention be readily acquired.

As an operative procedure it has been literally smothered under the childish conception that multiplicity of scraping and cutting instruments are necessary. As an example: In one instance 154 separate pieces are advertised as constituting a set of prophylaxis and pyorrhea instruments. The uselessness of such an array as well as of numbers of other sets that have been and are being put out, especially for the treatment of pyorrhea, bear testimony to the want of understanding and inadequate conceptions of the oral prophylaxis treatment. "Common Sense versus Instruments" might well serve as the title of a paper on the technique of Oral Prophylaxis. Twelve or fifteen properly constructed instruments, exclusive of porte polishers, constitute all that are needful in the most complicated cases, even for the treatment of pyorrhea.

From what has been said respecting the importance of cementum and pericementum, it will be readily understood that no instrument should be used with points or edges that will remove or preventably injure the cementum of the roots. This will be better understood by citing two cases which exhibit instrumental extremes: One, a man who believed that the roots would be injured by sharp cutting instruments, had all edges dulled before operating; the other, a Chicago man, said, "I know that I can remove all deposits with this instrument for I can cut right into the tooth substance with it." These two extremes furnish a warning in instrumentation in all prophylaxis and pyorrhea cases. Instructions may be summed up by saying, remove all foreign matter of whatever kind but do not destroy or injure the cementum of the root.

In its more comprehensive aspects the oral prophylaxis treatment should embrace the treatment of all surgical or pathological conditions of the mouth and teeth. Its chief significance lies in its prevention of caries and in the remarkable restoration effected in all pathologic mouth tissues by placing the teeth in a non-irritative condition. The treatment is unique, it is both manipulative and surgical, forced and positive, in contradistinction to a prophylactic, a germicide or an internal medicament. The object is to free, at fre-

quent intervals and thus render immune all exposed tooth surfaces from the disintegrating agents that are working chemically in the heat of the mouth to dissolve both enamel and dentin. The treatment, in which co-operation of the patient should be enlisted, has been found in ordinary cases to best meet requirements when maintained at monthly intervals.

The process in detail consists in the careful removal of all calcic deposits, inspissated secretions, bacterial plaques, all accretions, especially at the gum margins; all instrumentation should be followed by thorough polishing of all exposed tooth surfaces using hand methods only (let it be again emphasized that power polishers should never be used); it is not alone labial and buccal surfaces that are to be polished, but the lingual, palatal and proximal surfaces as well, using for this purpose orange wood points in suitable holders—porte polishers—charged with finely ground pumice stone as a polishing material. Treated in this manner there will be not only the removal of all septic accumulations but the teeth will be placed in the most favorable condition to prevent and repel future deposits and to aid efforts of the patient in the direction of cleanliness and sanitation. A most remarkable revelation attending the treatment is that the teeth themselves, especially the dentin and enamel, begin a surprising change for the better under the treatment in all respects. The change which is first and specially noted in the improved color and the life-like appearance of the teeth, is undoubtedly due to quickened circulation and renewed activity in the pulp and the tissues nourished by it. This is a physiological result of freeing the surfaces of the teeth from the constraining influence of the septic plaques and stagnant accumulations that interfere with circulation in dentin and enamel. Dull, opaque tooth substance, often loaded with offensive “old ivory” pigment, is under the treatment, soon transformed into clear transparent tooth tissue, the teeth assuming the appearance of living organs, each having an impressive individuality.

In every instance in which this treatment has been instituted and maintained for deciduous teeth, and in many cases of adults also, there has been full immunity from decay, and the teeth in a short time have shown a marked change for the better in their structural composition. The extreme and unnatural sensitiveness of gum tissue attended with congestion, purplish color and tendency to bleed, a condition called by Dr. Talbot gingivitis, has, in every

instance, been quickly overcome and there has been full restoration to the normal low-grade sensibility of this tissue. The natural pink tint of the gums with typical striations and beautiful festoons have in every instance followed the treatment.

For fifteen years the revelations and the benefits of this treatment have been to me a constant source of satisfaction and delight, and with increasing emphasis they are demonstrating the necessity for its adoption in all mouths having natural teeth.

AN INTERESTING CASE.

One remarkably interesting and instructive case is that of a boy of strongly marked nervous temperament, brought to me in delicate health when but three and a half years of age. There were five large cavities—three approximal—in his teeth at the time and two places exhibiting such predisposition to decay that I prognosed cavities in them within three months. Through exercise of patience and perseverance the five cavities were excavated and filled with amalgam. (Perfect operations were impossible.) Following the filling, his teeth were carefully treated every two weeks for an entire year, barring one month during the summer vacation. Since that time I have seen him on an average once a month, meanwhile his teeth have received not more than the ordinary care of childhood at home. The boy is now in his seventeenth year. The temporary teeth loosened and were expelled, every one in nature's own way, through perfect root absorption. The first molars, erupted at five and a half, have large crowns with strongly marked, pointed cusps and correspondingly deep sulci. The formation, shape, and time of eruption of these teeth, presaged early and rapid decay; nevertheless they are all in perfect state of preservation, and evidently improving in character. Neither infection nor chemical agents are permitted to fasten upon any of their surfaces, and the life forces are evidently building into them a more compact and decay-resisting structural consolidation.

Another result, convincing as to the benefits of this treatment beyond all others that can be cited, may be witnessed in connection with many cases in which decay, running riot in both temporary and permanent teeth at eight to eleven years of age, has been practically stopped following the full institution of the prophylaxis treatment. The second or twelfth year molars, erupting into a

healthy environment, have been universally found in good condition, and have continued thus far devoid of decay, even in the sulci. Not in one instance only but in practically every instance these conditions prevail.

Whilst benefits to the teeth are exhibited especially in exemption from decay; there are other benefits also most interesting and instructive. I have under treatment several instances of seeming recalcification in the dental tubules, following treatment that was begun in the initial stages of decalcification. Opaque spots on the face of the incisors, indicating an interruption of dentoenamel circulation have been made to disappear under the treatment and the translucency of the tooth has been restored. These exceptional cases, exhibited to a number of dentists who have visited my office on different occasions are mentioned to show the control a living, active pulp may have over the dentin and enamel.

Surface infection interferes with circulation and hinders pulp nutrition in the teeth. Manipulative treatment and local medication attending the frequent removal of surface infection, stimulates the remarkable changes and improvements in the character and substance of all teeth that are the subjects of this treatment. More important even than control of decay is the power of this treatment in preventing and curing inflammatory conditions in the pericemental membrane, the gums and in alveolar tissue.

It was Dr. Talbot who said in one of his papers that the alveolar process was the most sensitive tissue of the body. I penciled the statement "nonsense" and have never rubbed it out. Alveolar tissue is not more sensitive nor more highly endowed than other osseous tissue. The alveolar process is terminal tissue and it is practically temporary. It is thrown out about the roots of the teeth for their support whilst they are in the jaw and that only. When teeth are extracted, the alveolar tissue is taken up, absorbed. It never reappears.

When alveolar tissue is attacked by septic irritants, as in the inflammation of pyorrhea, it is broken down (not absorbed) by necrosis, a suppurative process wholly different from lymphatic absorption. The prophylaxis treatment is a preventive of this suppurative process. I have never seen a case of beginning pyorrhea following the early institution and proper maintenance of the prophylaxis treatment.

The diseases to which alveolar tissue is liable, including necrosis and phosphor necrosis, are also prevented through the prophylaxis treatment.

Necrosis seldom attacks alveolar tissue except at the terminal edges; it is then always a result of the presence of some local septic irritant. Phosphor necrosis is wholly from a poison induced by a local irritant about the teeth. It is a poison absorbed through inflamed gum tissue. It never appears in an edentulous mouth. If irritants are kept from the mouth and teeth by the prophylaxis treatment phosphor necrosis will never appear. Dr. Knowles has stamped it out entirely in the match factories over which he presides.

A case of syphilitic pyorrhea involving the alveolar tissue, due to infection induced by cigar smoking, came under my observation and treatment about two years ago. It was the case of a young man about 27, of good habits but a great smoker. There were no special pockets but all upper and lower teeth were involved to some extent in the pyorrheal inflammation. The gums and pericemental tissue were in a state of acute inflammation and extremely sensitive and painful. Between the upper bicuspids, right side, there was marked recession but no apparent "pocket." Diagnosis of the case was at first obscure but it is revealed in the following dialogue:

Q. "You are a great smoker?"

A. "Yes, I am out a great deal and I smoke nearly all the time."

Q. "Do you smoke cigars or a pipe?"

A. "Cigars."

Q. "Do you smoke one brand of cigars or different brands?"

A. "One brand."

Q. "Do you buy your cigars by the box or singly?"

A. "By the box."

Q. "When you start out in the morning you put a quantity from your box in your pocket and smoke them during the day?"

A. "Yes."

Q. "Do you use a meerscham or hold your cigars in the mouth?"

A. "I hold them in the mouth."

Q. "And hold them on the right side of the mouth?" (In the buccal region.)

A. "Yes."

Q. "You smoke a good cigar?"

A. "Oh, yes, my cigars are made in Tampa, Fla."

"Well, your trouble is due, first, to smoking too much and second, to smoking a cigar made and boxed by one man; that man is suffering from a case of syphilitic pyorrhea; if we could see him we should find that he licks the ends of his cigars as he puts on the final finish. You must at once change your brand of cigars, use a meerschaum for the present and limit your smoking to three or four cigars a day." A most careful prophylaxis treatment was instituted in this case with the usual remedies, Phenol, Zhongiva and Zinc Chlorid. The treatment was maintained every day, then every second day for about two weeks, when the intervals were lengthened to a week, then to two weeks and finally to the usual monthly treatment. Improvement began immediately but the cure was not effected until a sequestrum of alveolar tissue about the size of a small collar button came away from the palatine aspect between the right upper bicuspid at about the point where the cigar was held between the teeth. The cure was then complete.

A SUBSTITUTE FOR THE MISSING FIRST PERMANENT MOLAR.*

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Despite the fact that so much has been written about the deleterious effects resulting from the extraction of the first permanent molars, but little information can be found regarding the treatment after the loss of the teeth has occurred. I refer not to those cases in which, for the purpose of "regulation," a symmetrical extraction of the first molars has been resorted to, but to those cases in which the first molars, owing to structural defects, have broken down and have been lost before the patient has reached middle age.

The absence of the four first permanent molars reduces the masticating surface 30 per cent. A further result of the extraction, especially in the lower arch, is the gradually increasing mesial

*Read before the American Dental Society of Europe.

inclination of the second molars. When these teeth stand so inclined that but one-half of their occlusal surface is effective, the total masticating surface of the teeth is reduced a further 12 per cent. A patient in this condition has, therefore, a masticating power 32 per cent below the normal. This percentage, however, applies only when the four third molars are present. In the absence of these teeth the percentage is far lower, amounting to more than 50 per cent below the normal.

Usually the patients have become accustomed to this condition and, unless their attention is specially called to the fact by the dentist, are not aware of any marked loss of masticating power. When, however, the patient does realize that something should be done, what substitute has the dentist to offer? Four bridges? And when the patient is informed that this means trimming down eight live teeth, or devitalizing eight pulps and filling sixteen root canals, he can not be blamed if he refuses to endure such an operation in order to relieve a condition which apparently causes him no inconvenience.

A somewhat more acceptable substitute for an extracted first molar is a removable saddle-bridge held in position by clasps around the adjoining teeth. But this, also, has its disadvantages. It often produces hypersensitiveness of the necks of the teeth clasped, and, under unhygienic conditions, makes these teeth less resistant to caries. One advantage that the removable saddle-bridge has over the fixed bridge is, that it is less liable to loosen the abutment teeth in their alveoli.

With the advent of casting, however, an entirely new type of bridge has come into existence. This bridge, while overcoming most of the faults of other types, has some particular advantages of its own. As the bridge in question is essentially an inlay bridge, the mechanical principles governing the use of the inlay as an abutment must be thoroughly understood before the construction of this bridge is attempted.

Various forms of inlay bridge abutments have been suggested, but, owing to the fact that they are constructed upon unsound mechanical principles, the majority of these fail when put to the practical test. I do not consider those as inlay abutments, that depend upon pins or posts for anchorage. In such cases the strength of the abutment depends upon the length and thickness

of the post, while the office of the inlay is limited to filling out the space caused by the loss of tooth structure. The only reliable inlay abutment is one whose form is such, that it can transmit to the abutment teeth every stress and strain put upon the bridge. This refers not alone to the force of mastication, but also to the internal stress and strain set up within the structure (the bridge and its piers) by the individual movement of each anchor tooth. This factor, so commonly neglected in the construction of bridge work, is of prime importance in determining the correct form of the inlay abutment.

Normally every tooth possesses a certain amount of mobility

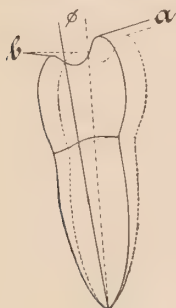


Fig. 1.



Fig. 2.



Fig. 3.

in three directions: bucco-lingually, mesio-distally, and vertically. Under pathological conditions this movement becomes exaggerated. Without going into detail, as I have done elsewhere*, I will describe the effects of these movements upon the inlay abutment. For the sake of clearness, a bridge with but one inlay abutment will be considered. The inlay is placed in the second molar, while the other abutment consists of a shell crown placed upon the second bicuspid. A square bar connecting the two, represents the bridge. In order that the mechanical principles involved may be more clearly understood, it is assumed that the bicuspid possesses movement, slightly beyond physiological limits.

BUCCO-LINGUAL MOVEMENT.

A loose tooth in moving describes an arc whose center lies at the apex of the root. The crown, therefore, changes its angle, and

*The Metallic Inlay, and Das Metalleinlage-Verfahren. 2nd Edition. H. Meusser, Berlin, Publ.

is displaced vertically and horizontally (a, b, Fig. 1). Whenever the loose tooth changes its angle bucco-lingually in relation to the firm tooth, a torsional strain is exerted upon the connecting bar. The torsional force exerted upon the inlay is proportional to the angle of torsion (the movement of the loose tooth). It is, however, independent of the length of the bar. The effect of this force is to twist the inlay out of the shallow cavity upon the occlusal surface of the molar (Fig. 2). The point *a* acts as a fulcrum. To counteract this force, a proximal cavity should be excavated, with walls parallel to the long axis of the tooth (a and b, Fig. 3). This locks the inlay so that it cannot be dislocated by torsional strain.

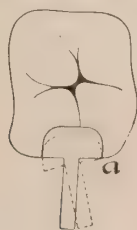


Fig. 4.

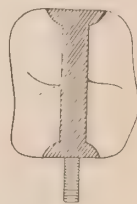


Fig. 5.

The vertical displacement is slight (a, Fig. 1), as the tooth moves through but a small arc of a circle. The effect of this movement upon the inlay abutment will be described later.

The horizontal or lateral displacement (b, Fig. 1) of the loose tooth exerts a strain upon the inlay abutment proportional to the length of the connecting bar and to the force applied to the loose tooth. The lingual or the buccal edge of the inlay acts as the fulcrum (a, Fig. 4). If the inlay is firmly anchored, there is a tendency to rotate the firm tooth. The mechanical action represents that of a lever of the first class applied at a right angle to the long axis of the tooth.

The mechanical principles upon which the anchorage of inlay abutments depend, can most clearly and easily be illustrated by representing the tooth as a nut, and the inlay and connecting bar as the head and handle of a wrench. If a wrench has sufficiently wide jaws, it will grasp a nut firmly when placed at right angles to the nut, as shown in Fig. 6. Applied to the abutment in question (Fig. 4) this signifies, that if the inlay were extended across the occlusal surface and then at right angles upon the distal surface of the

molar, the leverage exerted by the loose tooth could not endanger the anchorage of the abutment (Fig. 5).

The best shape of inlay abutment for resisting the torsional strain and the force of the leverage produced by the bucco-lingual movement of the loose tooth is, therefore, one, which in the form of a wrench, extends over the mesial, occlusal, and distal surfaces of the tooth. On one of the proximal surfaces the margins a and b, Fig. 3, should be parallel. Special care must also be taken to make

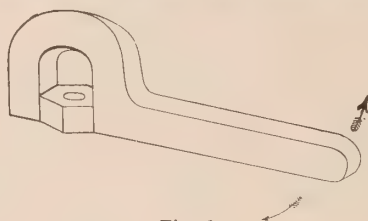


Fig. 6.

the surfaces a and b, Fig. 11, representing the jaws of the wrench, as parallel as possible.

MESIO-DISTAL MOVEMENT.

In this direction also, a tooth moves in an arc of a circle whose



Fig. 7.

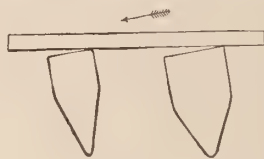


Fig. 8.

center is situated at the apex of the root. The slight variation occurring in the molars may be disregarded. The diagram Fig. 7 shows two pointed blocks, representing a bicuspid and a molar, across which a bar has been laid. In moving, the blocks describe circles about their pointed ends. If the bar is moved distally, both teeth will tip in this direction, and support the bar only on their mesial edges (Fig. 8). When moved in the contrary direction, the bar bears only on the distal edges of the teeth (Fig. 9). If instead of a bar, a double-ended wrench with long jaws is placed upon the blocks, no tipping movement can take place as the blocks are firmly

held at right angles to the wrench by the bearing surfaces, which are parallel to the long axes of the teeth (Fig. 10).

These facts prove that the strain upon the inlay abutment, due to the movement of the anchor teeth in a mesio-distal direction, may be overcome by constructing at least two broad bearing surfaces at right angles to the direction of movement. These will be parallel to the long axis of the tooth if it stands in a normal position. A very satisfactory way of increasing the area of the bearing

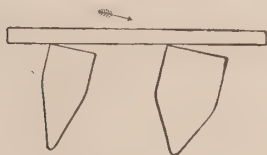


Fig. 9.

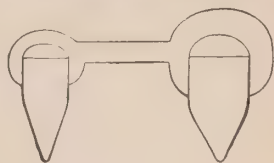


Fig. 10.

surfaces, is to flatten the proximal surfaces of the tooth with a diamond disk (Fig. 11). Theoretically, these surfaces should be parallel, but in practice they may be made to converge slightly, in order to prevent distortion of the impression or pattern during removal.

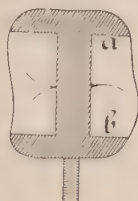


Fig. 11.

The effect of an inclined position of one or both anchor teeth on the inlay abutment, must also be taken into consideration. This condition is most commonly met with in lower second and third molars. If vertical pressure is exerted upon a bridge supported by a tooth of this kind, the latter is tipped still more (Fig. 12). The bar rests on the distal margin of the tooth, while the mesial margin draws away from the bar. The remedy in this case, also, is a broad bearing surface against which the inclined tooth can find support (Fig. 13). Such a surface is always preferable to a post. The latter may, however, also be used, and in effect, replace the second jaw of the wrench. Not only in this abutment, but also in others,

may one jaw of the wrench be represented by a post, or an extension into the pulp chamber. But whenever possible two flat surfaces of sufficient area should be used. In pulpless teeth with crowns weakened by decay, this is not always practicable, therefore, posts must often be relied upon.

VERTICAL MOVEMENT.

Though the normal tooth has a slight movement in this direction, it is only in advanced stages of alveolar absorption that the

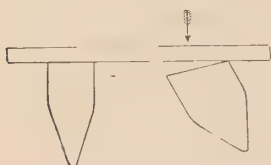


Fig. 12.



Fig. 13.

movement becomes very marked. If both teeth move the same distance, the anchorage of the bridge is not endangered. When but one tooth is loose, the strain upon the abutment in firm tooth becomes enormous. The diagram (Fig. 14) shows, that when

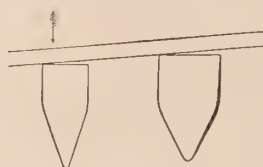


Fig. 14.

pressure is exerted upon the bar over the loose tooth, spaces are formed between the distal margins of both teeth and the bar. As, however, a loose tooth is easily tipped, it will remain at right angles to the bar; and the effect of the action will be that of a powerful lever of the first class, the mesial margin of the firm tooth acting as a fulcrum (Fig. 15). Applying the wrench principle to counteract this force, large bearing surfaces, mesially and distally, as well as a strong post should be used (Fig. 16). If the bicuspid is quite loose, or if the crown of the firm tooth is extensively decayed, an inlay abutment is contraindicated. A strong shell crown should be used in its place.

In determining the proper shape of an inlay abutment, the

inlay may be regarded as a combination of two wrenches, the one acting parallel to the long axis of the tooth, to prevent tipping, the other, at right angles to the first, to counteract rotation, and lateral displacement of the other end of the bridge.

In closing the space caused by the extraction of the first molar, I use, upon the second molar, the inlay abutment just described. Upon the second bicuspid, however, I construct an abutment of an entirely different type. In the ordinary bridge the abutments are

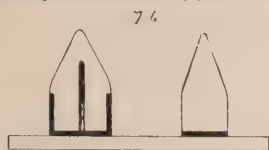


Fig. 15.



Fig. 16.

firmly cemented onto the anchor teeth, thus producing rigid abutments. In contradistinction to these, it is possible to make a flexible or compensating abutment in which, one end of the bridge, in form of a bar, rests in a depression on the occlusal surface of a specially



Fig. 17.

constructed inlay. Owing to its many advantages, especially in connection with inlay work, this type of bridge deserves full recognition by the profession at large. Such bridges with but one rigid abutment, though very rarely met with in practice, are by no means new. Several years ago, Dr. W. S. Davenport called attention to the advantages of the compensating abutment, as he has named it, and presented a number of forms of this type of bridge.*

The compensating abutment does not prevent the normal mesio-distal movement of the tooth to which it is attached, nor does it in any way interfere with the normal vertical movement of either one of the anchor teeth. This is one of the most important advantages of this type of bridge. Each abutment tooth, moving independently can assume a position in which all points of the root

*W. S. Davenport, Dental Bridge and Pier Construction. Trans. N. Y. Institute of Stomatology, 1902.

bear equally against the walls of the alveolus when force is exerted upon any point of the bridge. The peridental membrane will remain healthy, and no inflammatory changes in the bone, due to localized pressure, will take place.

Compared to this, how unfavorable are the conditions in a case similar to Fig. 17, when rigid abutments are used. Under pressure exerted upon the bridge, the inclined molar cannot accommodate itself to its socket, but is forced downward in a vertical

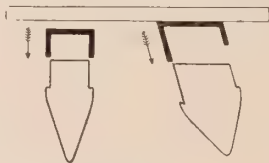


Fig. 18.

direction. The pressure on the peridental membrane is then not equal at all points, but is localized on the anterior surface of the mesial root. Owing to the distal movement of the molar in attempting to move into its socket, the bridge will move distally to a slight extent, and greater pressure will be exerted upon the peridental membrane on the distal surface of the root of the bicuspid than upon that of the mesial surface. There can be no doubt, that such disturbance of physiological function must be detrimental.

Another advantage of the compensating abutment is, that inclined anchor teeth do not cause serious difficulty in the construction of the bridge. Each abutment being made separately, can readily be brought into place (Fig. 18). If two inlay abutments are used, each one while being set can be adapted perfectly to the margins of the cavity; a feat difficult to accomplish with rigid abutments in the form of inlays.

In practice the construction of a bridge of the type mentioned, is briefly as follows: If the pulps of the molar and the bicuspid are normal, they should be left intact. The first part of the bridge to be made, is the inlay abutment in the molar. Returning to the principle of the wrench, large bearing surfaces, parallel to the long axis of the tooth, should be constructed upon the mesial and distal surfaces of the molar. The quickest and most painless way of preparing these surfaces, is to flatten the tooth with a diamond disk.

One or both proximal cavities should be deepened slightly in order that the inlay may resist torsional strain. The occlusal surface is cut out to a sufficient depth with a knife-edged stone, so that the platinum-irridium bar does not interfere with the bite and lies well within that part of the inlay which fills this part of the cavity (Fig. 23).

The bar should be square and about a sixteenth of an inch in thickness. One end of the bar is bent so that it extends into the

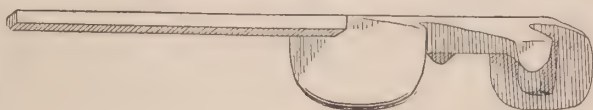


Fig. 19.

distal cavity of the molar almost to the cervical margin (Fig. 23). This facilitates the removal of the wax pattern. Inlay wax is introduced into the cavity and roughly modeled. The bar, previously roughened, is warmed and forced into place, the pattern finished,

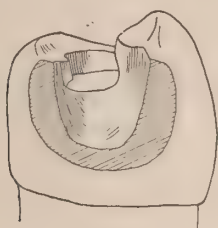


Fig. 20.

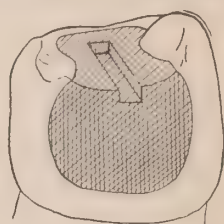


Fig. 21.

and the inlay cast on to the bar in the usual manner (Fig. 19). In order that the alignment of the other end of the bar may be correct, while taking the impression of the molar cavity, the occlusal surface of the bicuspid is excavated only so deeply, that the bar rests in the position that it is to occupy later. After the rigid abutment has been cast, the cavity of the bicuspid is completely excavated, and the distal contour flattened with a diamond disk. In restoring the contour, this places the margins of the inlay in a zone more immune to caries. Extension for prevention is practiced without, however, extending the excavation of the cavity itself (Fig. 20). The margin of the inlay being thin and accessible at all points, can be easily burnished to the tooth and finished. The same condition

exists in the inlay upon the flattened surfaces of the molar (Figs. 22 and 23).

To make the pattern of the bicuspid cavity, an excess of wax is introduced and roughly modeled. After heating and oiling the end of the bar, the inlay is brought to place in the molar. Pressure is then exerted on the bar until its end has sunk so far into the wax that the inlay in the molar is perfectly seated. The pattern is thereupon carved and finished, the inlay cast, and cemented into

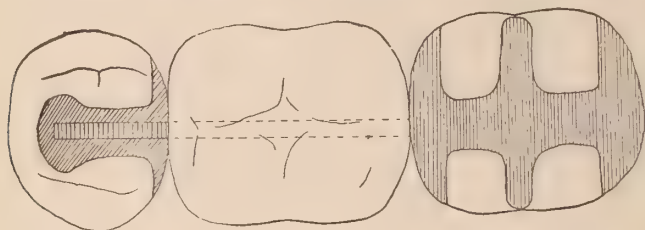


Fig. 22.

the cavity (Fig. 21). At this stage the bridge consists of two perfectly fitting inlays, the one rigidly connected with the bar, while the second inlay supports the other end of the bar in a slot upon its surface (Figs. 22 and 23).

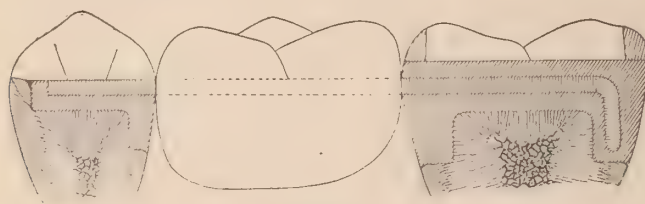


Fig. 23.

Upon the roughened bar, a tooth is modeled in wax and, with the bridge in place, the occlusal surface is carved so as to give a perfect articulation. The pattern is then cast in the usual manner, and the inlay cemented into the molar. If desirable, a removable porcelain facing may be used. In certain cases it is preferable to construct the bridge so, that the rigid abutment is attached to the bicuspid while the compensating abutment is placed upon the molar.

In concluding, I will briefly recapitulate the advantages of this type of bridge, which has stood the test of practical usage for over three years.

The rigid inlay abutment, constructed in the manner described, furnishes a reliable anchorage without making the devitalization of the pulp necessary.

The process of construction and the form of the bridge are such, that the margins of the inlays are accessible everywhere. They can be accurately burnished and finished, thereby avoiding the danger of imperfect adaptation and secondary caries.

The compensating abutment, impairing the physiological movement of the anchor teeth but slightly, permits the roots of these teeth to move in their alveoli, so that the pressure exerted upon the bridge will be distributed equally to all parts of the periodontal membrane.

And finally, as the substitute filling out the space is in perfect articulation, no undue strain is put upon the anchor teeth.

SOME CASES OF MAXILLARY RESTORATIONS.*

BY FLORESTAN AGUILAR, M. D., D. D. S., MADRID, SPAIN.

If modern surgery aims to perfect the operative systems on conservative principles, it is in the operations of the mouth and face where the surgeon must observe most carefully that conservative policy, as in that territory he can hardly move the knife without producing esthetic or functional alterations that cannot be repaired.

When the surgeon is obliged to extirpate a portion of the skeleton of the face, which cannot be replaced by plastic procedures, he resorts to the art of prothesis and the patients are sent to us to replace artificially the lost parts.

Tumors and lesions of the jaws frequently demand a total extirpation of the bone, or a large portion of it, and though the operation may have cured the evil, the patient is left with mutilations which will result in deformities of the face, consequent on the cicatricial changes and interfragmentary retraction, with difficulty in swallowing, troubles of pronunciation caused by the deviation of the tongue and diminution in size of the oral cavity, sialorrea, owing to the patient's inability to retain the saliva, etc.

*Read before the American Dental Society of Europe.

Those inconveniences can be avoided by the judicious application of prothetic appliances, and the different methods of artificially substituting the lost parts, can be classified in four groups, viz.:

1. **SECONDARY OR TARDY PROTHESIS:** consists of restorations made after complete cicatrization and healing of the wound. To this group belong the obturators, artificial vela, artificial noses, ears, etc.

2. **IMMEDIATE PROTHESIS:** Temporary restoration of the piece amputated by another artificial one of rubber, metal or another substance, at a moment constituting an interval between the severing of the bone and the suturing of the soft parts. Fixed piece, placed with a temporary character to avoid the deformities following cicatricial retraction and which, later on, must be substituted by another definitive and removable prothetic piece, when the healing of the wound is completed.

3. **PROTHESIS BY IMPLANTATION:** consisting in the permanent substitution of the extirpated portion by an artificial piece, inserted in its place during the performance of the operation and covered with the soft tissues, thus causing it to be entirely encysted in them, with the final purpose of being left permanently in situ.

4. **PLASTIC PROTHESIS,** or filling of the periostic shell, which remains after the partial resection of the bone with plastic substances, (Amalgam, Moseti's Paste, Magnesium, Jodoformic Cement, etc.)

Of those different procedures, those that are of more particular incumbrance are those corresponding to the first and second group, i. e., Secondary Prothesis and Immediate Prothesis, both of inestimable value in restorations of the mouth and with which the dentist may become a valuable help to the surgeon.

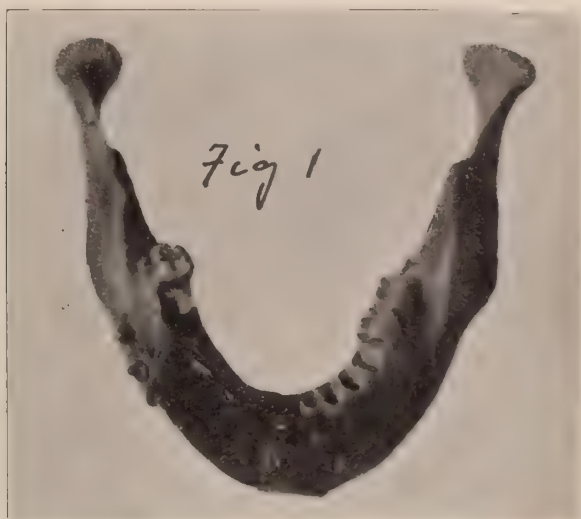
The third and fourth group are of less interest to us. Neither the Prothesis by Implantation nor Plastic Prothesis have any application in maxillary interventions and are applicable only to other parts of the skeleton.

We are only mentioning them in order to exalt the brilliant co-operation to these advancements in surgery made by such dentists as Michaels, Claude Martin and Delair, who ingeniously invented the apparatus employed by Pean, Ollier, Sebileau and others, in restorations of bones of the extremities.

I want now to put before you some cases of the second group,

of Immediate Prothesis, where I have obtained results so satisfactory as could not have been obtained by any other process and when the work of the surgeon could never have restored the normal functional and esthetic conditions of the patient without the help of the dentist.

CASE No. 1. A captain of infantry, to whom a revolver shot produced a comminute fracture of the jaw, in a line corresponding to the two right bicuspid. The consequent necrosis decided the



physicians in charge of the patient, to remove the right half of the body of the bone.

I was called in consultation the day before the operation and immediately I prepared a mandible of vulcanized black rubber, of such dimensions as I thought suitable, as well as the silver and screws necessary for the fixing, according to Martin's method, of that portion of the rubber piece which would have to be required.

On the following day, at the Military Hospital of Madrid, the operation was performed, removing a piece of the mandible about six centimetres long. When the resected piece was handed to me, I rapidly cut off from the rubber mandible a piece equal in dimensions to the one amputated from the bone. In the interval of the operation and without, of course, suspending the chloroform anes-

thesia, making use of suitable burs mounted on the engine, and with due observance of surgical asepsis, I inserted this piece into its place by means of the fixings which may be seen in Fig. 1, which is a photograph of the duplicate piece I now present to you for



inspection, this latter piece being an exact reproduction of the case.

The wound was then sutured in its different layers (mucosa, muscular and cutaneous) and during forty-two days following the



operation, the patient was looked after and suitably nursed, until the time when the external wound was healed and reached a proper state for allowing the substitution of the piece of "immediate prosthesis" for another movable and definite one, provided with teeth.

To do this, I removed by the mouth, the primitive piece, Fig. 2, (which at one of its ends was loose already, the bone surrounding one of the metallic bolts having necrosed) and after taking the corresponding impressions of the mouth, I constructed that very



Fig. 4A.



Fig. 4B.



Fig. 5.
Before operation.



Fig. 8.
Six months after operation

day the dental plates which the patient has been wearing, now for more than a year. Fig. 3 is a photograph of this piece.

The results could not have been more satisfactory and the patient, who without the aid of the "immediate prothesis" would have

remained deformed, disabled to pronounce properly or to masticate well and rendered useless for his military career, has now a normal



Fig. 6. After operation



Fig. 7.

face with normal features, Fig. 4, a perfectly phonetic pronunciation, capable to masticate his food and is enjoying excellent health.

CASE No. 2. A young lady, 22 years of age, with an "Osteosarcoma" on the left side of the lower maxillar. The Neoplasia apparently comprised the left side of the jaw; the aspect of the



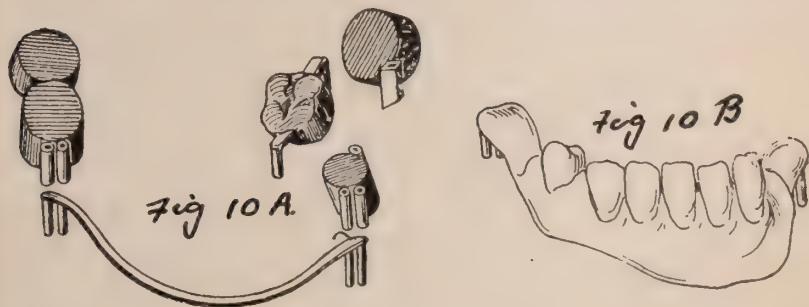
Fig. 9A
Before operation.



Fig. 9B.
3 months after operation.

face of the patient was such as may be seen in the photograph (Fig. 5) taken before the operation.

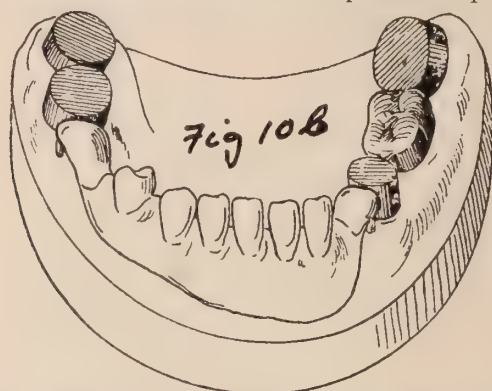
Professor Gudea, who was to operate on her, asked me to pre-



pare an "immediate prosthesis" for this case. Accordingly I prepared from rubber one-half of the left jaw, of such dimensions as I calculated to be those of the bone of the patient, and on the following day she was operated, removing a piece of the jaw of a size

which extended from a vertical line at the height of the left lateral incisor to another horizontal one, as far as the upper third of the right ramus, not affecting therefore either the apophysis or the condyle with their ligaments of the temporary-maxillary articulation.

Out of the rubber mandible I cut a piece of equal dimensions



to those of the amputated bone, and, duly observing the rules of aseptic surgery, I fixed it on to the fragments of the bone, using for this purpose a gold plate and bolts similar to those seen in Fig. 1, for the union with the body of the bone, and a silver wire for the union with the remaining piece of the ramus.

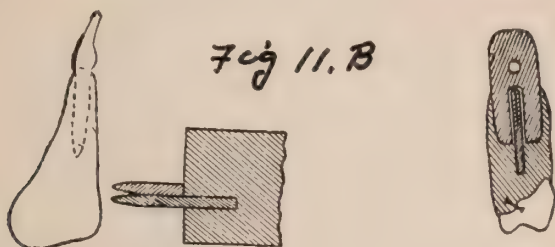


The wound was sutured, and the patient received proper care during forty-five days, after which time the original piece was removed and the permanent pieces constructed, these being two rubber and gold plates of the shape that may be seen in the photograph.

Fig. 5 represents the patient before the operation.

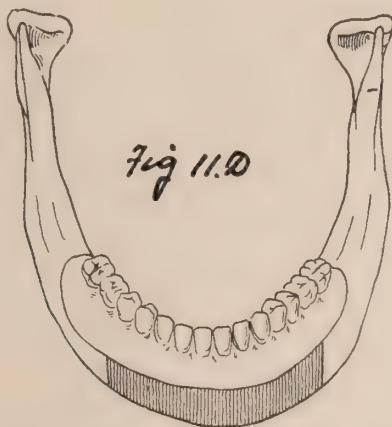
Fig. 6 is a photograph of the patient after being operated.

Fig. 7 is a skiagraph of the patient with the piece of "immediate prosthesis" in position, as she wore it for forty-five days, and Fig. 8 is a photograph of the young lady six months after the operation.



The functional and esthetic results were excellent, as the appearance, speech and mastication of the patient are as good as could be desired.

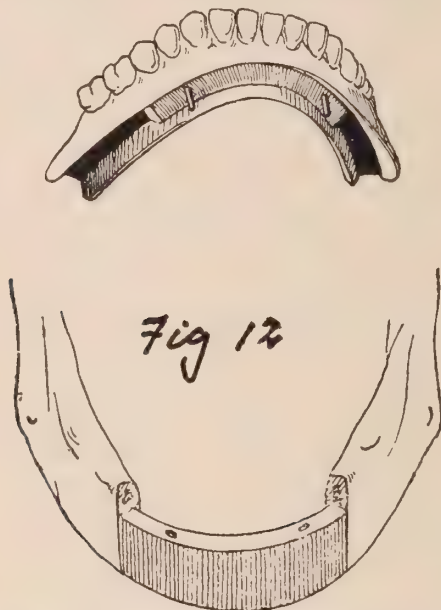
CASE NO. 3. A woman, 51 years old, with an "Osteo sarcoma" on the left upper maxillary bone, which demanded the total extirpation of the bone.



Two days before the operation I examined the patient and prepared an artificial left upper maxillary, after Martin's method. At the time of the operation the artificial bone was inserted, following closely the technic of Martin, which I need not detail here.

Unfortunately the cachectic state in which the patient was, and the great suppuration of the wound, decided the surgeon to remove

the artificial piece eight days after the operation with the desire of better checking the septic state of the wound. The patient recovered considerably and nine days after I was able to take impressions of the mouth and cavity and construct the plates and obturator, a duplicate of which I present to you. The surgeon and myself were anxious to place the prothetic appliance as soon as possible, to counteract the cicatricial retraction which was so rapidly deforming the patient's face and producing the exorbitism (pro-



truding of the eyeball), for, with the removal of the bone, the total hard floor of the orbit had disappeared.

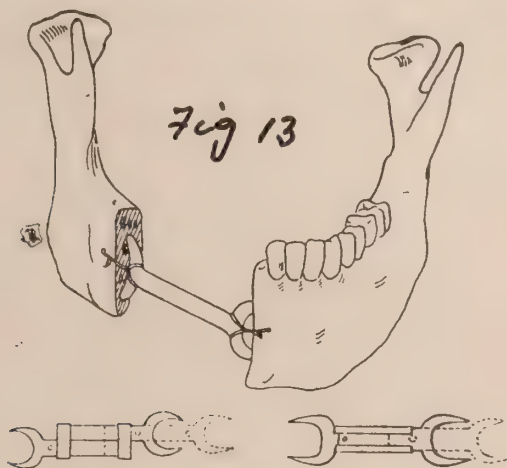
The results have been most satisfactory, as you can see by the photograph, Fig. 9B, of the patient.

We ought to propagate the advantages of these procedures amongst the surgeons and convince them of the necessity not to delay in sending the patient to the dentist weeks after the operation when the cicatricial retraction had already produced deformities, when the distension of these tissues is most difficult, and when it is difficult to insert prothetic apparatus, which the patient could tolerate.

The case ought to be examined by the dentist *before* the opera-

tion and with all the anticipation that may be possible. In this way his genius may some time be able to discern a means and prepare mechanical appliances, which in virtue of their precision and system avoid some of the inconveniences, which in cases of urgency cause their application.

As an instance, we may cite the case described by Riegner, in which the molars on both sides were covered by crowns before the operation, and a metal bar being prepared, same was immediately



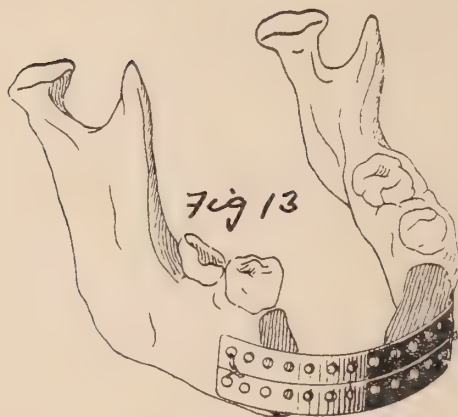
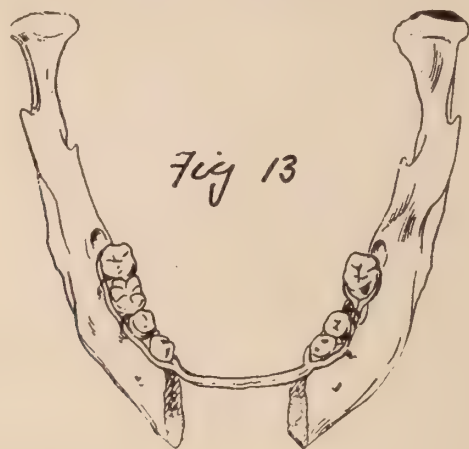
inserted after the amputation of the bone and, later on, when the wound had already cicatrized, the bar was substituted by a prothetic piece, as shown in Fig. 10.

Dr. Rudolf Weiser of Vienna has introduced a very practical improvement in this system of "immediate prothesis" of the mandible, Fig. 11. The ideal would be that the temporary piece, inserted at the time of the operation could serve permanently, but as this is not possible, Dr. Weiser with his method not only provides what in my opinion is the best means of adapting the artificial piece to the bone, but that that same piece may later on, after removal, be utilized as part of the permanent apparatus, Fig. 12.

Fig. 13 represents another method of surgical prothesis, employed by Saure, Partsch, Boeneken and Hahl.

The numerous series of cases presented in the book of Martin, published in 1889, proved conclusively the tolerance of the

tissues for these artificial pieces, inserted at the moment of the operation at an interval between the resection of the bone and the suture of the wound, and the most eminent surgeons have solicited the co-operation of the dentist for interventions of this character.



The invention of Claude Martin has been one of the most worthy contributions that dentistry has made to medical science, and it is to be noted that while in Europe the system of "immediate prosthesis" has been largely employed, especially by German and French surgeons, American literature, either medical or dental, has not devoted all the attention due to it.

AGE CONSIDERATIONS IN PROSTHETICS.

BY W. C. DALBEY, A. M., D. D. S., DU QUOIN, ILLINOIS.

Not long ago a lady patient, past middle age, came to me for a minor operation in the mouth. Upon examination I found one of the most beautiful pieces of bridge work I ever saw. (I forgot to attend to my own business.) The cusps were sharp. The sulci were according to nature. The lines were fine. The workmanship was splendid. Altogether, it was indeed a work of art. But there was something wrong. I asked her how she liked the work. She said, "It is pretty, but I can't use it very well, I can chop with it, but I can't move my jaws sideways in chewing. My teeth seem to lock." And it was true. Here the artist put in sixteen-year-old teeth in a sixty-year-old mouth. I found upon further examination that her natural teeth were worn nearly flat; and the lateral movements she has been used to were hampered. Here was a beautiful piece of work practically useless. The dentist did not take into consideration the lateral movements so essential in mastication. I should judge that the dentist who put that work in considered first of all, looks, rather than utility. Or, he forgot that age modified occlusal surface of tooth form. This patient was limited almost entirely to only crushing of food and, of course, swallowing it without proper insalivation, which always follows when movements are not free and when there is not an unrestricted use of the lower jaw.

Understanding as we do now the several movements of the human jaw and their uses there is no excuse for anyone putting in bridges or dentures that are not practical. Every extensive bridge as well as every artificial denture should be made upon an anatomical articulator that can be adjusted to mimic every movement of the jaw of the patient in hand.

The means of properly masticating the food infers a perfect articulation of the teeth, not only during occlusion of the jaws, but also during the various movements of the lower jaw in the acts of both incising and grinding the food.

The lower jaw is endowed with certain movements by virtue of the muscles of mastication whereby the teeth are brought into

various relations with each other for the purpose of incising food when both condyles of the jaw move forward and downward in the glenoid fossae which brings the cutting edges of the incisors together; and for mastication when the muscles move one condyle at a time forward and downward in the glenoid fossae, thus in their operation protruding the lower jaw to one side or the other. This lateral protrusion, when followed by a drawing back into the position of occlusion, is a provision whereby the cusps of the teeth, if they are in proper relation to each other, may be utilized for the comminution of food. The condyle paths should receive due consideration first and last in supplying artificial teeth.

In the young the inclination of the condyle path is usually greater; about 40 degrees is the average. In middle aged, about 33 degrees; and in the very old considerably less; and sometimes no inclination is recorded at all. It is not generally known that the condyle path varies somewhat with the age of the patient. It is not to be understood in the foregoing, however, that this much variation will occur in the same individual with age.

In the young the cusps are long and sharp and, of course, the sulci deep. Often the overbite will indicate the length of cusps. When the upper and lower incisors are brought together all cusps on bicuspid or molars should pass without locking in lateral movements. In the very young there is more of a chopping movement exercised, and as the subject grows older the lateral movement becomes greater. This wears away the cusps of the natural teeth; and at the same time there is a slight modification in the condyle path.

No artificial teeth should be placed in the mouth with cusps more prominent than the natural ones in the mouth. This is a definite rule that is not always observed, because often the inexperienced tries, so he thinks, to improve on nature.

At 35 years, the teeth usually show some wear. At 45 years they show considerable wear. At 65 years the teeth are worn flat with slight depressions where the cusps have been. At 45 years these depressions in the teeth are quite deep, owing to the fact that the dentin beneath, where the cusps were, is so much softer than the enamel at the periphery of the cusps.

This is a wise provision of nature. These depressions corre-

spond with the indentations of the mill stone; without them grinding would be practically impossible.

I can not find just the right word to express my indignation when writing this article, when I see many of my brother practitioners putting 16-year-old teeth in mouths of 60 years. Yes, they look pretty; and the patient must have them white as tomb stones, and straight as a picket fence. If you should begin with the cuspids and shading the teeth darker as they go back the patient thinks you have palmed off cheaper teeth on him. And if you grind them you are spoiling them, and you don't know your business. "Dr. Sloppy never ground my mother's teeth, and she wore them nearly all the time."

The longer I practice dentistry, and the older I get, and I presume wiser, the more I grind artificial teeth. I believe I put art and skill into them by so doing. Some will say that anatomical articulation will eliminate the grinding of artificial teeth. I contend it will not. It is true that modern anatomical teeth lessens the grinding for the younger patients. Proper grinding is essential and beneficial in practically every case, but especially in cases of middle age and past. Study the surfaces of the natural teeth at different ages and try to imitate nature. Nature is a splendid tutor. We cannot improve upon it.

THE SILICATE FILLING.*

BY L. E. CUSTER, A. M., D. D. S., DAYTON, OHIO.

We believe that enough time has elapsed since the introduction of the silicate filling that it can now be assigned to its proper place in operative dentistry. It is to the credit of the profession that the progressive dentist has of late years been working more and more toward inconspicuous operations. The time was when large gold restorations were feats of endurance on the part of both patient and dentist, and were looked upon with much pride. But, as with other things, the styles and fashions have changed and the public today rightfully demands that all unnecessary show of gold be

*Read before the St. Louis Dental Society, Sept. 2, 1913.

done away with. To this end, the porcelain inlay and the silicious cements have most nearly met the requirements.

For over a quarter of a century porcelain has been used with more or less satisfactory results for the filling of anterior cavities. While it is a marked improvement over gold, it, however, has not come up to the full measure of the requirements. The methods for the cemented inlay are radically different from the silicate. It necessitates extensive cavity preparation and requires a cavity with parallel walls. There must be no undercuts and there must be perfect access to the cavity so that the inlay can be inserted in one piece. This means not only considerable loss of tooth structure but in many cases a separation of the teeth.

The porcelain inlay requires a matrix and every porcelain worker is aware of the difficulties that accompany the formation of the matrix to the cavity; he is also aware of the extreme care that must be exercised from the beginning to the very end; he is also aware of the many technicalities that beset his way, the failure of any one of which may ruin the final product. And then at the end if the backings have all been at the proper heat and the color matches at the last, it may all be lost when set with cement. These are some of the difficulties that attend the making of a porcelain inlay, to say nothing of the large amount of time required.

As to the question of harmony of color the porcelain inlay has always been handicapped by the cement problem. It has been the experience of every porcelain worker that a perfectly matched filling before setting does not match so well after setting. The dentist has found that the cement acts as a curtain between the tooth and the filling, and this shadow effect can only be partially overcome by experience. He finds it necessary to make proximal fillings in the anterior teeth of a lighter color than would match the tooth before setting and even then these, as with all such fillings, appear lighter or darker depending upon the direction from which the light comes.

The porcelain inlay, although never in perfect harmony of color, was fairly satisfactory until the improved silicate came into use; then by contrast we become dissatisfied, for one of the principal features of the silicate filling is the harmony of color that can be so easily obtained. I have seen silicate fillings that defied detection by the eye. It was not until an instrument was passed over the

surface that they could be detected. This cannot be said of any porcelain filling that I have ever seen, except those set with a silicate cement. The porcelain may have matched most perfectly in color, but there was always the tell-tale cement line that can never be erased unless we use a translucent cement. The nearest approach today is a porcelain filling set with a silicate cement. Such a material as this has recently been brought out by De Trey Brothers of Zurich under the trade name of "Tenacit." The result is most pleasing, but as yet its durability is to be proven. The regular outline of a porcelain inlay is more noticeable than an irregular one. This was pointed out many years ago by Dr. Thompson of Chicago. To make the outline regular and symmetrical also means loss of tooth structure.

We have believed that a baked porcelain filling does not change color. Some three years ago at the Denver meeting of the National Dental Association, a paper was read calling attention to what seemed to be a bleaching of porcelain fillings. It is hard to believe that a material possessing the properties of porcelain should change color in time but the discrepancy especially in matrix baked porcelain fillings shows to an observing eye that a change of color does take place in time. Ready baked inlays, such as the Howe and Ash, do not seem to change. This would lead us to believe that all porcelain being practically of the same basic formula, the cause lies in the working and baking of matrix made inlays—for we must exclude any effect of the matrix material upon the change of color of the porcelain for the bleaching takes place in the mouth after the matrix has been removed. This change of color occurs more rapidly in porcelains of low fusing point and it appears that the higher the fusing point the less will be the change.

As to the durability of the porcelain inlay, it may be classed next to the gold inlay. It does not withstand the forces of mastication quite so well. Being brittle, when carried out to a thin edge, it is liable to fracture. In cervical and proximal positions when beyond the direct force of mastication it is equal to gold.

Having briefly reviewed the faults of the baked porcelain inlay as we have found them in practice, we now come to the silicate filling—its advantages and disadvantages, its manipulation and the indications for its use.

The preparation of the cavity for the silicate or the silicious

filling, as Dr. Ames calls it, is very simple indeed. When this material was first placed in our hands we were instructed to prepare with as much undercut or anchorage as for a metal filling. No reliance should be placed upon adhesion. It is now improved in this respect so as to be almost as adhesive as an oxyphosphate cement. This is especially characteristic of Schoenbeck and Synthetic. I have had a few occasions to remove these fillings or parts of them and I have found them to be firmly adherent to the tooth structure. We may, therefore, place considerable reliance upon this property and prepare the cavity with but little if any undercut. This means less pain and less work. The simple removal of the decay and dressing of the thin enamel margin back to one of about the same thickness and body that is customary for cement is all that is required. As cited earlier in the paper, a regular outline which is absolutely essential for gold or porcelain is not necessary with the silicate. In fact, it is a disadvantage in point of making of an inconspicuous filling. The irregular outline obscures the dividing line between enamel and silicate. It has been frequently stated that the silicates shrink in setting. I am not quite prepared to believe this statement for I have never lost but one or two fillings by what might be attributed to shrinkage. The rarity of these cases leads me to believe that it was due to an improper mix at the time or a damp cavity rather than to an ever present characteristic of the silicate cement. I should here say, that a cavity when filled with a silicate should be more thoroughly dried than for a phosphate of zinc cement. Most of the oxyphosphates are to some extent hydraulic and the most perfect dryness is not so essential. The silicate is much more sensitive to moisture than cement, not only when kept in the bottle but when mixed and inserted in the cavity. Moisture in the dentin seems to prevent the proper setting reaction and at the same time the adhesive grip of the layer of silicate next to it.

We would therefore gather from the foregoing that one of the most essential points in the preparation of the cavity for filling is thorough dryness. Some dentists believe this can never be secured without the use of the rubber dam. I, however, find myself using less rubber dam every day. The ordinary proximal cavity can easily be treated without the rubber and the cervical cavity which on first thought should always be rubber protected, is the very one

on which I would not use the rubber. In the first place, these cavities extend under the gum and crowding the gum away with rubber and ligature is just that much further than the edge of the cavity, and is always painful. My technic is this: simply the use of an astringent and compressed air. I have for some five years been using about 20 per cent solution of trichloroacetic acid—just strong enough to faintly whiten the gum; others to whom I have recommended this, commend it highly. The cavity, having been prepared, the gum is wiped with this solution and, to make sure that it reaches well under the margin, a delicate spatula is used. The cavity is then dried with alcohol and compressed air. It will be found that the gum under the action of the astringent and compressed air has shrunk and there is positively no weeping of the gum tissue whatever. This condition can be maintained for at least ten minutes, which is sufficient time for the introduction of a silicate filling.

The mixing of a silicate cement is quite different from a zinc phosphate. The spatula should be of agate of an oval form on cross section so that the mix can be rolled ahead of the spatula, and the handle should be round so as to permit of free rotation. When the powder is gathered into the mix, a moment's spatulation as for cement will distribute it more evenly. There is quite a difference in opinion as to just how thick a silicate should be mixed. It is also hard to describe. I have tabulated all of my operations and I find this to be the result: a mix which I would regard too stiff, will, if exposed to attrition appear to flake off, or an entire contour will break off, whereas a mix which I would regard a thin one will be adherent to the tooth, but will soon show the results of frictional wear. The happy medium is just between these. A silicate mix should be thicker than phosphate of zinc and at a point just where a little thicker would rob it of its adhesive property; and theoretically I believe this is so. With the Synthetic, which I am now using mostly, the proper mix is where the surface still appears glassy, but where the addition of any more powder would cause it to lose its gloss.

In order to obtain the most perfect harmony of color, it has been my custom to place two or three shades of powder upon the slab which contain the colors of the tooth. For a yellow tooth, for instance, I place a generous quantity of white and deep yellow upon

the slab, then mix to a creamy consistence about half and half, compare with the tooth, then add of the white or yellow until the desired shade is obtained. A little experience soon teaches about the proper proportions of each with which to begin the mix. The surplus powder left upon the slab, if in large proportions, is each returned to its respective bottle; if not, it is all gathered together in a scrap bottle for this purpose. It will be found that the general color of the scrap powder is a good general color for crown cavities of children's teeth. At this point, I should call attention to the extreme necessity of keeping both powder and liquid from exposure to the air as far as possible. The silicate material, both powder and liquid, are much more sensitive to additions of water through open bottles than is phosphate of zinc. To this end, when opening a new package, it is my custom to immediately replace the glass stopper of the bottle with an ordinary but well fitting cork. It is a wonder to me that so important a point as this should be overlooked by the manufacturer. Where a powder is to be sealed, a glass stopper is the very worst thing to use, for it is impossible in practice to keep the neck perfectly clean and if any powder clings to the neck, the stopper will not go to place. To prove that a glass stopper leaks, fill two empty silicate bottles with sulphuric ether, cork one with its glass stopper and the other with an ordinary cork. It will be found that in 24 hours the ether has disappeared from the glass stoppered bottle and none from the other.

In inserting a silicate filling tantalum or tungsten instruments are necessary. It is my method to insert as quickly as possible and pat to form and keep up the condensation until signs of setting appear and no longer; after which, if convenient, keep dry a few moments and varnish. Experience has shown that the silicate requires much more care as to its insulation from moisture during setting than any other material. To this end, since much time would be necessary if the rubber is depended upon, a varnish, if found equal to the requirements, is much more desirable. Inasmuch as an alcoholic varnish will not serve, an ether varnish is indicated. Many use wax, but varnish is easier of manipulation. For this purpose I have been using an ether varnish under the name of "new skin," or what is virtually a collodion varnish. This will be found easy of manipulation, is adhesive and lasts two or three days. In cervical cavities, a delicate spatula should be used to carry the varnish well under the gum.

The finishing of cervical fillings, at least that part under the gum can best be done at the time of making the filling by using a thin and smooth tantalum spatula like instrument and feeling the way along under the gum. Care must be used not to reach so far beyond the cavity margin as to start bleeding. If much time has been consumed up to this point and moisture is feared, the filling may be varnished and finished at a subsequent sitting. For this purpose, fine cuttle fish discs have proven best in my hands.

The instability of the color of silicate fillings was at first a serious drawback for it was chiefly for esthetic purposes that these fillings were used, but this material has been markedly improved in this respect, so much so, that it may now be regarded to be as lasting as the filling itself. It was the change of color of one make of silicates that caused me in 1908 to cease the use of silicates for about a year. Yet the durability of some of these fillings is surprising, for I have in mind about a dozen cases which it seems may never need replacing. In 1909 I again took them up, using a new make, the Schoenbeck. This material I have found to be adhesive, to retain its color well and to last well, but owing to the uncertain working of the liquid, I gradually drifted to the Synthetic. This material I find to be very uniform in its working, even in extremes of weather.

The question of the durability of silicate fillings has by this time been clearly settled—at least in my own mind. When I find a filling in the anterior teeth that has been doing service for four years and promises as much longer time, I would call that a permanent filling. Then when I find it to harmonize so well with the tooth in color that it must be searched for to be found, I would also regard it a most practical filling and especially when we take into consideration the ease of insertion from both the patient and the dentist's point of view. The question of permanency when applied to dental operations, should be based upon the amount of time taken to make the operation in proportion to the life of that operation. If a silicate filling requiring 15 minutes for its insertion lasts five years, it is a better and more permanent filling and altogether a more practical operation than a gold one which requires an hour's time to make but which lasts only ten years.

In order that this filling may be called a permanent filling, it, however, must be used where indicated. It has but one objection

and that is it will wear under friction. It does not dissolve out in a chemical way as does phosphate of zinc. According to Dr. Ames, there is no reagent or chemical condition in the mouth which effects a silicate cement. The only wasting away is that due to direct friction. Permanency can not be expected when used on the corner of any tooth. It will stand heavy impact in the crown of a bicuspid or molar, but will not withstand a sliding motion. It, therefore, makes a splendid filling in the crowns of children's teeth where the cusps are high, for at this age there is not much frictional movement of the jaws.

The indications for a silicate filling I have classed in their order as to practicability. First, the proximal cavities of the anterior teeth which do not come to the incisal edge, the labial and cervical cavities of these teeth, in fact all the cavities of the anterior teeth which do not come to the incisal edges; the cervical cavities of the bicuspids and the crown cavities of children's teeth.

While this paper has treated of the silicate cement filling and its indications, it must not be understood that the porcelain inlay has been relegated to the past. It will for a long time be used in conspicuous cavities exposed to wear. It still has a very prominent place in dental practice.

PROCEEDINGS OF SOCIETIES.

ILLINOIS STATE DENTAL SOCIETY, MAY, 1913.

DISCUSSION ON THE PAPER OF DR. GRABER.

DR. P. A. PYPER, Pontiac:

I think this is an imposition on the part of the society to substitute me at this particular time in this discussion for Dr. Prothero. I am also sorry for Dr. Graber that the discussion was not begun immediately after his paper was read. It was one of the ablest I have ever read or heard on the subject. He has opened up a new field in prosthetic dentistry. He has sounded the keynote that I have not in my researches and observations been able to learn of any other man doing. He has given us a responsibility that I do not believe the majority of us have really put upon our own shoulders. He has called attention to many things in prosthetic

dentistry that have not been heretofore looked upon as important. He has taken up the harmonious side of prosthetic dentistry and he has placed the responsibility upon the individual who makes a plate. Unfortunately we have not felt that responsibility in making artificial dentures, with one exception, and that is the mechanical. There is one thing that is always more prominent than any other, and that is the fact that if the teeth are so made that the individual gets service we get our money. On the other hand, if the patient does not get service, we are not so likely to get our money. The consequence is we have directed our attention mostly to the mechanical part of the operation. There is nothing that is more unsightly than disharmony of an artificial denture with the rest of the individual. Every man and every woman pays some attention to esthetics. They may not call it esthetics, but it begins in the child and it follows us throughout our lives. Some people are constituted with a large amount of it. Others we may say are careless and shiftless in all of their makeup. Some people have a high sense of art, and some have a high sense of harmony. All of those for whom we have to make artificial dentures have it more or less, but it does not make any difference, the responsibility is on us, whether they have any sense of harmony or not. We are the men who have to be judges in these cases. Our patients have not the time or they are not in a position to say or know just how they want their teeth made or how they should be made. We ought to know how they should be made, and every man who makes an artificial denture should feel that responsibility. We all consider it from a financial standpoint, and we want to succeed. The success or failure of one plate means the success or failure of getting more plates to make. It is really a very unfortunate thing that there are so many of us who do not like to make plates. I suppose there is good reason for it. And personally I think lack of compensation is one of the principal reasons.

A few years ago Dr. McIntosh and I were talking with a retired dentist. He said, "Dr. McIntosh what do you get for plates?" He said, "I am getting \$12 for them," "and what are you getting for amalgam filling?" "I am getting \$1.50." "You are robbing the people. We used to put these amalgam fillings in for 50 cents." "Yes, and you robbed the people when you charged them \$40 for a plate." I think the retired man was right, he could afford to retire.

If we did not have commercial men in the practice of dentistry, and if the price had remained at \$40.00 I believe we would have better dentistry today than we have. It has been reduced to such a commercial basis that the man who has to make a livelihood slights the work if he can because he cannot afford to put into it all the time that is necessary to get all the conditions of restoration to the point in which they really ought to be.

The doctor in his paper spoke very well of the harmony or correlation in dentistry. He spoke of the sculptor and the artist and about getting things balanced up right. The sculptor adds a little here and takes away a little there, and if you have ever noticed, it is a mechanical thing in a way. But take the sculptor when he is fixing up the clay model. It is a stroke there and a stroke here. A little is added there and a little taken off here. And that, gentlemen, is what we are doing when we undertake to make an artificial denture. We have to add a little here and take a little away there, twist the teeth a little this way and that way, lengthen them or shorten them, all to get character to that individual.

I think more and more attention should be paid to the esthetics of the individual cases, while mechanical principles cannot be overlooked. The only trouble with mechanics is that it will not apply to all cases. Some cases are suitable, and some will fall right under the general laws or principles of mechanics, while others will not. So it is a case of individuality after all.

He has outlined the types of people, the character of their temperaments, and temperaments are a good guide, but like mechanics, all people do not come up to the requirements. What is good for one individual with one type of temperament will not be good for another of the same type. The question simmers itself down to this, that we have to put individuality into every individual case. After you have taken the bite, then begins the greatest responsibility in setting the teeth high enough or low enough, curved enough, or deep enough to suit the individual case, and this is where the artistic part or the esthetics counts.

I do not know whether what I am going to say will be considered a slam or not, and perhaps I ought not to say it. But with all due respect to the laboratory man, he is not to blame. The impression is taken, the mush bite is taken, and that is the last that the dentist sees of it until it comes back to him a finished

product. I do not believe that such a dentist is an artist in any sense of the word. He has shifted the responsibility on to the laboratory man. The mechanical man has taken it up the best he knows how without seeing the individual. Let us suppose that some sculptor started out with clay to make a bust of William McKinley. If he did not have a picture or model or anything that ever looked like McKinley, what do you suppose the result would be? Naturally it would be a very imperfect bust of that great man. The mechanical man would make good use of the principles of mechanics, but he must necessarily omit something. He omits the artistic or esthetic part of the denture. The dentist should take that responsibility upon himself. There is one law in art that no mechanics will get, and that is, those teeth must be set to that individual and tried in and observations and corrections made right there for the artistic or esthetic arrangement to that individual.

According to the relations of one to the other, if it is a full denture, upper and lower, there are certain mechanical principles of leverage which must be considered, and when those are taken into consideration the denture is tried in the mouth and the esthetics may be an entirely different thing and may be entirely wrong for that individual.

I am prone to believe that a great many dentists are not accurate in their observations of color. I do not say they are color blind. All teeth have a distinct color for the individual; which they take from the environment. Let us consider, for instance, the implantation of teeth. No attention is paid to the color of the teeth to be implanted because the environment of the mouth makes the tooth harmonize with the others. One thing that is very fortunate for the artificial denture man is that sometimes in some mouths they take on a characteristic that belongs to that individual. While porcelain is supposed not to absorb, it is likely to get a coating that harmonizes with the individual more than when the dentist selects the teeth. One needs to be careful about the original or base color. Take a person with a blond temperament, and we would say immediately that person has light hair, hence yellow teeth, but a person with a fair skin will vary from the other with a tanned skin in possibly from three to five shades, or may be more, in color for the teeth. The types are good guides, but the indi-

vidual must have a trial, and often times it is well to try one and then the other shade in the individual in order to ascertain which is the most harmonious of what you have in hand. I am very sorry to say, that many people select in their artificial dentures too heavy grades. I am also sorry to say that feature is noticeable in the replacement of individual teeth. Very few people have as extensive a gray as is put into the artificial tooth, or it is of such a different character on account of the difference in translucency of the teeth that are in the mouth, and the harmony is broken up at once. I very seldom, if ever, use anything else than straw whites (I call them straw whites), medium yellows, and yellows, keeping out the grays and the greenish colors in the shading. There are very few people I find that really demand those. There are a great many people who have attained that in their mouths from neglect of their own teeth, but in those cases, if we have coming to us a person in whom we expect to remove what remaining teeth that patient has, we say those teeth have been so horribly neglected that they are out of harmony with the individual and we would not duplicate them if we could in the artificial.

The author of the paper has given us a splendid example of the Greek type of humanity, and since reading his paper it has been impressed upon my mind that my observations should have been more active and extensive in this regard. As to the distance of the chin from the nose, I have been watching it more and more, and it seems to me that I can very nearly say to a certainty, as I look upon most people as they go along, the chin is out of position. They have an artificial denture, but it has not restored that chin, or put the chin back to where it originally belonged. Unfortunately, we have not all got Greek perfection studies to work upon. If we had we might get measurements, or work out a system of measurements, and put in the dentures mechanically. But as the essayist has said, very few people come up to that standard of measurement. There is a variation in their own cases, a variation in the natural teeth if brought to the point of articulation and the relation of one tooth to the other, making it necessary for the individual dentist to study the individual case. I believe if we did not have the unfortunate behavior of the lips, we might bring more and more of our dentures to correspond or to replace the natural teeth and features and we could measure up according to the Greek standards.

But the lip is another consideration. The prosthetic men will tell you to mark in your bite the line of the lips. The line of the lip in closure is a good guide, but in behavior of expression is a different thing. No two lips operate the same, nor do they operate the same in all environment. The mouth is the greatest of all expressions. You know immediately what is normal for an individual by the expression of the mouth. You are conversant with this expression. When a patient presents himself to you, you know by the expression of the mouth whether or not he dreads the operation that is before him. You know pretty nearly whether you can enter with pleasure upon your work in the case of that individual, or whether you will approach it with anxiety. You know very well, when you insert a good filling that is pleasing and attractive, and also what position the mouth takes when the patient rebels against the bill. (Laughter.) You have seen the direction in which the corners of the mouth go. It means something. The behavior of the lips tells us something. We have to set up the teeth in wax to see which way the lip is going to behave in these different expressions.

The author of the paper spoke of artificial teeth as they are made and are handed to us in the market. The manufacturer is supplying our wants and needs according to our demands. If we were to take any of you men here to the supply houses and ask you to pick out a set of teeth that would be a duplicate to any one person's teeth in this audience I doubt whether any one of you could be able to find an exact duplicate of it, notwithstanding you may have thousands of teeth from which to make a selection. There is something wrong in the shape, something wrong in the color. It is the best they know how to make according to what we have demanded of them. There ought to be some way for us to get together with the manufacturer and establish a more normal tooth form, so that we can make a selection which will correspond with the individual or normal case as nearly as possible. There is one very fortunate thing, and that is, that teeth today are made so they can be changed in form. I do not believe I have ever sent an artificial denture out of the office the same as it came in to me. It was necessary to touch a little here and grind a little there in order to create harmony and to secure a more normal appearance. Whoever saw a person of middle age with nice, bright, shining pointed cuspids,

centrals, laterals, and all uniform? That type of being does not exist. Why should we put in an artificial denture that is so? It does not belong there. I have seen some plates in the mouths of patients who would be better off if they had let them drop into the wash bowl or sink and break off a part of a tooth which would make the plate more harmonious to them. It would take away the mechanical accuracy of shape that did not belong to the individual.

The manufacturer no doubt will be able to manufacture these things that the profession demands.

More attention should be paid to the esthetic side of dentistry, and if this were done, I am convinced that in the end we would be able to get more money for plate work. In constructing artificial dentures, it is necessary for us to follow up our mechanics in such a way that we will get as near as possible mechanics and esthetics combined. Then, these artificial dentures will be a pleasure to our patients, and they will be a pleasure and comfort to us to look upon in after years.

DR. B. J. CIGRAND, Batavia:

I was asked to take the place of Dr. Prothero in discussing this paper. I have not read it carefully but have made some notes on the subject.

I do not need to emphasize the fact that this paper is a very important one. I might exaggerate this emphasis by saying it is one of the most important subjects now before the dental profession. By that paper there has been a responsibility put upon us which we as a profession cannot shirk. I agree with the last speaker in saying that this is a duty that absolutely devolves upon us, and no other persons or institutions. This is not a question you can shift or slide over and say it is because the manufacturer is responsible; nor can we say the colleges are responsible; nor can we say the societies are responsible; nor can we say the great human family is responsible. This is our own responsibility, and the condition that exists is our own fault. The manufacturers and laboratories do the best they can. They spend thousands of dollars in trying to carry out our ideas. They are, aside from humanity itself, our best friends, and it is up to us to bring to them the pattern upon which we are working.

While visting, last summer, three or four large plants for the

manufacture of teeth, the superintendents of those eastern plants all agreed in saying that the dentists have not yet come to them with a uniform system or method, style, shape or size, and they are patiently waiting. There has been nothing done. So I say again: this is our own fault. We talk about it, we know the situation, but as an organization we do not take concerted nor concrete action to accomplish anything. It would seem to me this would be the most happy time for the Illinois State Dental Society to do something along that line. I earnestly suggest it, and I would like to see a commission, not a committee, appointed, composed of three members of the Illinois State Dental Society, and three of every other State Dental Society in the United States, and by that means have expressed the concrete action of all state dental societies. This commission should meet at some convenient time, not when another convention is going on, and have diagrams and models so arranged that such a body could form some real concrete basis in this matter. Then, when we go to the large manufacturers and laboratories, they will indeed be happy to hear from us, and I am satisfied they will be glad to carry out our instructions, because it will be to their interest to do so. They aim to serve and to please us. Then we will be doing something instead of annually talking about it. It is a great subject that cannot be cast aside nor handled in 10 or 15 minutes. If a large commission of that character met and decided the matter in five or six days, they would be doing a wonderful piece of work. I am in favor of the appointment of a commission that will have this matter in charge. But my talk of it is not enough and I hope you realize its importance.

This is a question of temperament, bi-temperament or tri-temperament. The entire world can easily be taken, if you please, into an imaginable laboratory and dissected out and made into three great kingdoms, the animal, vegetable and mineral kingdoms, and the human race, for the purposes of prosthetic dentistry can be taken into an imaginary laboratory and be divided into motive, mental, sanguine and lymphatic temperaments. Those are absolute or basic temperaments and when united with each other the result is a bi-temperament. The great Creator has made us to belong in any one or all of these classes. As to the original temperament, called by some the bilious temperament, it is the motive tempera-

ment, the great human machine that is cut on very strong angles—the angular head, the high cheek bones, the Roman nose, knuckled fingers, the dark eyes, swarthy skin, the dark, shaggy, stiff hair, slow mind, angularity everywhere. That motive temperament with big bones is basal. We have the mental temperament which is a more rounding off temperament, more grayness, softer hair, rounder forehead, roundish appearance of the malar bones and a cutting away of sharp corners. The hands are softer and bones less prominent, action is quicker, eyes blue or grey, the voice is louder and more penetrating, and the entire system vitalized by nerve energy, and the action of the whole being is swifter. We pass from angularity to a rounding off of the angles in the mental temperament. The sanguine temperament approaches a circle. The sanguine temperament illustrates the circulation, the heat, and the ruddy, flushed face, the soft, warm hands and laughing eyes and smiling mouth, all indicate that it might have been called the cardiac or mirth temperament. These constitute the foundation laid by Spurzheim a hundred years ago, by Gall of Germany, by Combs of England, by Wells of America, by Drayton of America, and by Galton and Dalton of England, and accepted by the entire progressive, medical profession. And we must wake up if we would turn out the kind of work that the world appreciates. Then, we have finally the lymphatic treatment, which is a reversion, as it were, and the face resembles an inverted egg, with flabby skin and a sleepy, sluggish look. In these temperaments we have the disposition to deal with and teeth to select which will harmonize. Then comes the question of food itself, and those who live on flesh or meat, consequently there is not much rotation of the jaws because all meat-eating animals open and shut their mouths, there is no rotation; and there is not much movement of the condyles in the fossae. You have simply to regulate the sharp cusps, the angularity as the mouths of these persons simply open and shut because they love meat. That is the basic idea of that temperament.

Then we have the mental temperament in which there is a rounding of the cusps more and more, and, because there is a rounding of the cusps there is a condition which favors more movement from side to side. This mouth does not simply open and shut because it loves meat, but it opens and shuts and slightly slides from side to side because it eats meat and cereals. Then we come to

the sanguine or roundhead, the florid skin, the soft light silky hair; the plump heavy flesh about the bones, and their love of gaiety and comfort fits well the forms, with an additional appetite in view of the fact that not only do they want meat, but they want cereals, and they accept the third equation and love vegetables, and the jaw moves from side to side considerably because there has been a change in this type of people. And the lymphatic has even greater movement of the jaws from side to side, and these people, they love meat,—they love cereals,—vegetables and they love liquids. In other words, they love anything that you can put on the table. Their regulation is in accordance with that, consequently there are few cusps, and the jaw has anterior-posterior as well as a marked lateral movement.

Incidentally the terminology of these temperaments can be hastily illustrated in this way. We have always three faces to deal with, the face that is absolutely straight, with forehead, mouth and chin on a line, here is the Daniel Webster face, the straight face (illustrating). Next we have the Cardinal Newman face, with the heavy forehead, and the protruding chin, sunken mouth and small nose—the concave face. And here we have the Henry Clay face, which is an oval face with receding forehead, prominent nose and retreated chin—the convex face. So you see the straight face, the concave face, and the convex face, and all people fall into one of those three classes. I am pleased that dentists, and artists have accepted my definition of the basic faces, as the straight, concave and convex faces.

The question is asked, when you have an edentulous mouth to deal with, how can you determine approximately what those teeth were? A good rule that has been used and advocated for many years is the one by Dr. Berry, of Milwaukee, who has made this a special study. He says the forms of the teeth are largely indicated by the general outline of the face. We must take into consideration the forehead, the eyes, the nose and mouth, and these same teeth are indicated more or less in the person's jaws. The temperament is there. It does not disappear. The profession has been given many lectures on this subject before local and national societies. We must try and arrive at a standard of selecting teeth that will harmonize with the face.

Another method is the question of comparison with the finger

nails. I have observed that the shape of the teeth and the shape of the nail is identical; imagine the end of the finger nail, the incisal edge and you have the central; the finger proper will be the root end of the tooth. I have taught this from observation. These are all theories, of course, founded on comparison; there is a certain element of truth in them just the same. I will say, let us not feel that all has been accomplished, because there is much to do, and along art lines we have only begun.

With reference to the forms of the teeth that are usually put into mouths, possibly the most distressing sight we have is where a person has irregular teeth, pitted teeth, or Hutchinson teeth, and a beautiful porcelain crown that is perfect is put in, which is four or five shades lighter than the case demands. There is absolutely nothing that is more out of harmony. Have the artificial tooth as dark as the neighboring tooth and with your mechanical ingenuity and skill, make them rough and make them appear as much as possible like these other apparently ugly teeth, for there is even harmony in ugliness. Harmony is not the only word we want, it is correspondence, the great law of correspondence in which man has been created by an individual pattern, and, not by some common pattern; for every man is created by his own and appropriate pattern, and in that pattern there is a law of correspondence. That word correspondence means a mutual adaptation of one thing to another; whereas harmony is a different thing. Correspondence means they are native, born together, while harmony is an artificial product or result. We have to study the laws of correspondence and adapt the rules of harmony.

We have also some difficulty with the subject of dental laboratories that is quite natural. A very large percentage of prosthetic work is done by the laboratory; possibly seventy-five per cent. If we have to resort largely to laboratories, it is for us to arrange a system whereby we can understand each other. For instance, we have a case requiring a special or peculiarly shaped tooth, which should be characteristic. If the laboratory people and ourselves were a unit on terminology, we could write to each other in a word or two, but I have read many of these letters to the laboratories, and models are sent in with nothing to guide people. We as a profession are unable to definitely describe and hence all this conglomeration of ideas. Whose fault is that? Is it the fault of

the laboratory? No. It is the fault of the dentist who sends in a description of a case, which description means nothing; and yet this is what we are doing, and blaming the other fellow.

Let us speak of a long bite; or a long incisal edge; and a short incisal edge, so that the laboratory man can understand what you mean. Aside from that, we would have the bow-faced tooth or flat faced tooth. All these are simple things which a commission could solve. We could have slips made in such forms that when you ask for a thing of the laboratories you would get it. It is easier for them to give a dentist what he asks for, than to be wondering what the dentist wants. We have in connection with the same item the subject of bell-shaped teeth or square teeth and various other things ramifying into innumerable classifications which should be simplified so that we should work in harmony with the laboratory. We should have the spirit of get-together which would mean more to us, than it could ever mean to them.

The same is true with reference to bridge work, in which product there is generally too much gold shown, and that can be illustrated very nicely by this form of bridge as compared with that form of bridge (indicating) which is so often seen. Here is a bridge tooth that displays as much porcelain as possible. Here is one that displays as much gold as possible. Show the porcelain, support it properly with gold. People will appreciate good dentistry; any person who says otherwise, does humanity an injustice. Do not get the idea that people do not care. The people do care, and the people will pay any man a high price and an exact price if he will deliver the goods. The members of this great organization should go out and teach the public by views and lantern slides and lectures until the ordinary quack and advertiser is driven from the streets, not by force, not by law, not by division, but because the public have been educated not to go where inefficiencies and misrepresentations rule the practice. We can cure them by education and in no other way. Education brings men to truth and wins their hearts and holds their admiration.

A set of teeth made at one time for a patient's mouth would not be the set of teeth that patient should want another time. A set of teeth made for a girl of 22 would not be the set of teeth she should have at 45 years of age, and I do not believe we should lead people to expect that a set of teeth should last all of their life, if they get such a set at 20. Such talk is absolutely out of

accord with scientific thought since we know that dentures of nature grow darker. Wrinkles come in where there were none before; and we should be alive to keep the face in harmony as well as concord and correspondence for there is our fine art. When we place a set of teeth in the mouth it should be in harmony, but we should take as a pattern the great law of correspondence that gave the original set, and mould, and model, and carve, and shape, and fashion until we approximate the natural forms.

Years ago we studied our cases and treated them for comfort and durability. We of today not only want comfort, but we want function. We want appearance and character, but should command harmony and correspondence, and if we get them the patient will say "That is what I want."

Dental prosthesis may be divided into three parts; dental prosthesis, oral prosthesis, and the best of them all, facial prosthesis, the restoration itself. The face is changing because we as surgeons have subtracted or eliminated. Let us restore and save the patterns. There is art, and when you say there is no art, but mere mechanics, I say the only place in dentistry where you have fine art is in that prosthetic dentistry, where you bring about the restoration of the edentulous mouth. The making of a gold filling is a mechanical art, whether you hammer or flow the gold. A good definition is, that fine art must inspire the imagination. Fine art must inspire calculation. Fine art is measured today on a scientific basis. It is founded on art itself. If you will apply fine art to the practice of prosthetic dentistry, you will have an abundance of opportunity which will redound to your satisfaction and your imagination will be aided by that other welcome agent, which, is compensation. Do not retreat from your duty.

There are three reasons I believe, why we should turn our work over to laboratories. I asked this question at a meeting of the Wisconsin State Dental Society and also at the Iowa State Society—what are the three reasons that make you send your laboratory work away? I told them to put the reasons on a slip of paper, not their names. The three reasons came forth. They are these: First, to avoid the soiling of the fingers. The next, or second reason, was to keep disagreeable odors out of the office. A third reason given by nearly every dentist was, I cannot get money enough for my labors in that division of practice. Here is another thing for a commission to handle; I need not dwell

further on them because they are three live questions, and I have advocated what I earnestly believe.

DR. GRABER:

In closing the discussion of this paper I will be very brief in my remarks. I am indeed sorry that Dr. Prothero was not present. I am sure he would have given us some valuable suggestions and would have expressed some good ideas on this subject.

Dr. Pyper has very ably opened the discussion. He stated that this is a duty which devolves upon us, we can't put it aside. I am sure that most of us fully realize that this statement is a fact. The dentist of the future must necessarily have a thorough knowledge of the subject of esthetics. It seems to me from the general thought of Dr. Pyper's remarks that all of us who are giving this subject thought and study, must agree in the main.

I like the suggestion Dr. Cigrand offers in regard to appointing a commission. It seems to me that this subject is of sufficient importance to us as dentists, to warrant such action.

He has elaborated quite thoroughly on the subject of temperaments. This is a very important matter from an esthetic point of view. I might have gone more into detail about it in the paper, but did not with the hope that it would be taken up in the discussion, which Dr. Cigrand has so thoroughly done.

His illustration which shows the lack of a system which would enable the dentist and laboratory man to better understand each other, emphasizes the fact that the average dentist is woefully deficient in the subject of esthetics. Many other examples could be given but the one Dr. Cigrand has used is very clear and evident.

In closing, gentlemen, I wish to repeat the statement that this paper is largely a compilation, I am making no claims for originality. The subject of esthetics is an old one, a great deal has been written on it, but we dentists of the present day are not generally well informed about it. If this paper in the form which I have given it serves to inspire a deeper interest in some of you to give the subject more study in the future, I shall feel that my effort will not have been in vain.

I thank you.

DISCUSSION OF DR. HARNED'S PAPER ON "PAINLESS DENTISTRY."

DR. C. T. HEWES, QUINCY, ILL.

I have nothing but praise for Dr. Harned's paper. He has shown you how we are seeking for the light and trying to lessen the pain of suffering humanity. I believe in a man using whatever means that will give him the best results. Possibly one of the best helps for the dentist is to be a good reader of human nature and be able to say and do the right thing at the right time.

Painless Dentistry is considered a *joke* by the masses of the people, and by the majority of the dental profession a *fake*. Our so-called systems of painless dentistry that we often see advertised in our daily papers may be the cause of this opinion, but whatever it is, are we not justified in doing painless work or as nearly painless as is possible with the means at hand?

To my mind there are several reasons why painless dentistry is desirable.

1st. Because it is more humanitarian.

2nd. Because it would destroy the fear of pain. One author says "that nine-tenths of life's make-up consists of a vale of misery and sufferings; of disease and torture, pain and tribulation. The so-called pleasures and happiness constitute the other tenth." If the question were asked you why a larger per cent of people in need of dental services do not present themselves for treatment, your answer would undoubtedly be, lack of knowledge of the importance of the teeth to the general health. While this is true, fear of pain would be a close second as a cause. The head of a dental manufacturing house has made an investigation and ascertained that only about eight per cent of the population are regular patrons of dental offices, and that from forty to fifty per cent are amply able to pay good fees, but are kept away through fear of the pain inflicted.

3rd. More and better work can be accomplished in shorter time and with greater ease. Have you ever noticed the difference in the mental attitude of a patient when excavating a devitalized tooth after having prepared a sensitive cavity? How rapidly you can work and how the agonized look has left his countenance. More thorough excavation can be done if the work is

painless. Have you not had any extremely sensitive cavity to prepare when the patient grabs your hands and pleads for you to desist? A dentist can not have a heart of stone in such cases and as a result will not thoroughly remove all decay, or properly shape the cavity. Under such conditions, we humbly pray that the filling will last, but fear for the future welfare of that tooth.

4th. Because it is more progressive. In this age advancement is the slogan of the day. This is true in every walk of life, not only in the business world, but in political, religious and professional life. Was there ever an age when so many preventative measures were used in keeping us healthy? Are we keeping up with the great medical profession if we still insist on doing painful operations by the inhuman methods practiced years ago, thereby causing our patients shock and nervous disorders?

5th. It is desirable because it is a practice builder. As a result of the educational campaign that is in progress there will be a great increase in the future demand for dental services, and one of the greatest assets a dentist has is the reputation of being careful and causing little pain. If we expect to keep the patronage of these anticipated patients we must do comparatively painless work.

If painless dentistry is so desirable, is it possible? I think it is in the majority of cases, depending on the means used to accomplish the end. In regard to extractions, I think with our local and general anaesthetics painless operations are performed. You frequently hear patients say that they would rather have a tooth extracted than filled so far as the pain is concerned. But what we mean by painless dentistry as I take it, is painless excavating. When a patient presents himself, meet him with a friendly greeting so that he will not feel under restraint. A few moments spent in getting acquainted will save time later. Listen to what he has to say about how sensitive his teeth are, and what difficult extractions he has had done. By this time you know he is dreading the operation and while the fear is imaginary, to him it is very real. Here to my mind is where mental suggestion comes in and use it for all it is worth. If the dentist is of a sympathetic nature and also something of an optimist, I think he can dispel most of the patient's fear by this means. Suggest that it will not be very painful, and believe it yourself. If fear of the forceps will stop the toothache which is an auto suggestion, does that not argue that it can

be driven away by other means? If fear has such power over the nervous system as to stop pain, can not we master our minds so as to control the mind of the patient and make him comfortable mentally? So far we have been trying to dispel his fear, and it would be highly injudicious at this time to take him into an operating room where instruments and forceps are in plain view. Have no more instruments in sight than are really necessary. Next make him comfortable in the chair by adjusting the head rest and back. Handle him easily. If you want the head moved, by a gentle movement indicate which way. If you want to be considered a painless operator, don't use rubber wedges for separating, and don't fill the tooth when sore. Before adjusting the rubber dam get an anaesthetic effect of some remedy on the gums. Use sharp burs at a low speed of the engine and sharp excavators and chisels. In dressing down the gold, use vaseline or soap on the strips and disks as that will prevent the heat from the friction. By the aid of suggestions and whatever medicaments may seem to be indicated and with manipulative skill, I believe the majority of cases will be practically painless. But we all have some patients who try our very souls. They are extremely sensitive and nervous and it seems to be an impossibility to do anything for them. This class of patients is where a general anaesthetic is indicated. The anaesthetics most used are nitrous oxide, nitrous oxide and oxygen and somnoform. The patient is not placed in an unconscious condition at any time, but is kept in an analgesic stage as near as possible, and is conscious of all that is going on. To this class of patients anaesthetics are of inestimable value. In the language of Dr. DeFord "Anaesthetize them, give them the bliss of anaesthetic relaxation if not of unconsciousness, and they will prove to be model patients."

While my knowledge of analgesia at this time is theoretical, I believe that analgesia is practical and by its use painless dentistry can be absolutely certain. I am in hopes that this phase of the subject will be thoroughly discussed by those who follow.

DR. ELMORE W. ELLIOT, Chicago:

Dr. Harned has shown us how necessary it is to gain the confidence of our patient; and to use his idea of travel, reading and keeping up with the times on all subjects is a very important point. I have found after visits abroad that I can talk with greater interest to my patients about the country in which they were most in-

terested, whether it be the "Land of Midnight Sun," the Alps of Switzerland, or the deep blue of the Mediterranean.

We should at all times use any and all practical methods of allaying the fear (for most of the pain with the careful operation comes from fear), whether it is by the use of suggestion, general analgesic remedies, or by the topical application of drugs, or any other means.

The Essayist further states, "I believe the careful conscientious practitioner feels that he can do a better operation, particularly where delicate manipulation is a factor, as in most cavity preparations, if he has the co-operation of the patient with all sensibilities alert. He feels the need of this guiding sense in approaching a live pulp. To remove the sensibilities of the patient, imperils the pulp." This statement, gentlemen, leaves absolutely no room for argument. I want to operate with as little pain as any one; but I want to say if there is any one place where we need this "guiding sense," it is when we are operating on a vital tooth. If we are operating about the mouth for the removal of dead bone, a cyst, or a tumor, etc., there is little harm done if we go a little farther than we intended. In fact, this would doubtless be considered good surgery; but when operating on a vital tooth, with the intention of keeping the pulp in a healthy condition, it is very necessary that we take every precaution to avoid subsequent irritation. We all know that this delicate pulp will not tolerate too much abuse and remain healthy.

As the Essayist states, the first successful attempt in the drug world with painless dentistry, aside from general anaesthesia, came with the discovery of cocaine. History tells us that Koller of Vienna reported the discovery of cocaine in 1884 to a congress of German oculists. In a short time thereafter, cocaine, or the alkaloidal salt, cocaine hydrochlorate, was used as a local anaesthetic all over the world. Different men experimented with the drug. Some, with their patients, others on the lower animals, and still others upon themselves. Hall, by experimenting upon himself, demonstrated that he could inject solutions of cocaine hydrochlorate into the infraorbital nerve and anaesthetize the teeth. Halsted and others, the following year, demonstrated that they could inject nine minims of a four per cent solution into the inferior dental nerve as it entered the inferior dental canal and produce complete anaesthesia of the gums and teeth of that side of the jaw.

The dangerous symptoms following the general use of cocaine, barred its use for some time by the general and dental surgeon. But after careful experiments by the more thoughtful men, it was found if used in certain strength solutions, which were weaker than those formerly used, it could be employed with safety. Personally, I want to say, that I can practice dentistry with greater satisfaction to my patients and to myself, and by this I mean with less pain, by the careful and intelligent use of cocaine than by any other drug or means at my command.

Cocaine possesses the physiologic property of inducing a condition of anaesthesia when directly applied to the mucous membrane, or when forced into the pulp tissue, by paralyzing the sensory nerve filaments. However, we must always bear in mind that cocaine is a protoplasmic poison, that muscles and nerve tissue cease to contract or conduct stimuli when exposed to even a weak solution of the drug, and that there is also a blanching of the part which later becomes congested.

With these facts at hand, we are not justified in using high pressure syringes for producing anaesthesia. This also explains the reason why cataphoresis utterly failed after the profession was liberally supplied with expensive apparatus.

We can use cocaine with great benefit when confined to the cavity of a tooth for sensitive dentine. I find daily use for the official oleate of cocaine. The cavity should be kept dry, preferably by the use of the rubber dam, when all dentine you wish to obtund is covered with the remedy. Dry cotton is then placed over it and the cavity sealed with cement to prevent pressure. If the oleate of cocaine cannot be procured, the following formula will act equally as well: two grains each of the alkaloidal cocaine and thymol, added to a half drachm of sterilized liquid vaseline. This formula has the advantage of being a disinfectant, as well as an analgesic. Dr. Buckley's "Phenol Compound" has great virtue when applied to deep-seated cavities, applying the remedy topically as often as is necessary.

In thinking of "Painless Dentistry" the first thought that enters our mind generally relates to the prevention of pain in connection with the preparation of sensitive cavities.

DR. F. B. CLEMMER, Chicago:

Dr. Harned has been very kind in his treatment of this sub-

ject which in our own consciences we know is a vital thing in dentistry. Pain originated with the sun, contrary to some people's ideas. I believe that the dentist came with the sunshine. I know the thing that brings us nearer to the hearts of our patients is the fact that we can do our work with sympathy and absence of pain.

I am glad that Dr. Harned did not "jump" on one subject which seems to be a particular one in this organization. I happen to be in favor of this method, but not foolishly so. I believe in using everything that will bring forth results. It is the results that we are after; and that is to inflict as little pain in treating our patients as we possibly can, consistently with good work. I care not what outfit a dentist may use, I know there is gratitude expressed by patients because of the absence of pain in our work. I do not believe there is a surgeon who operates on the human body that is indifferent to the pain caused the patient. The general anesthetic is "putting it over on" the patient. I believe in using analgesia and anesthesia wisely and with discretion, and give the people to understand that we are striving for painless but honorable dentistry.

DR. JOHN P. BUCKLEY, Chicago:

I want to practice dentistry as painlessly as any man, but I believe when we are dealing with the teeth, when we have a vital pulp with which to contend and when we have in mind the idea of saving that pulp, keeping it healthy, pain should be our guide, as Dr. Harned has said. I learned when I was a young man that there were four great virtues, temperance, fortitude, prudence, and justice. I remember they told me that fortitude was that noble purpose of the mind whereby we are able to withstand pain when necessary. There is nothing in the world we should stimulate or encourage more than fortitude on the part of our patients. We have had pain since the world began for some purpose, and to think of using nitrous oxide and oxygen for their analgesic properties in all cases in our practice is absolutely wrong. It is not always necessary to put our patients under the influence of such agents as nitrous oxide and oxygen. When we have a patient occasionally where the methods that have been suggested by Dr. Harned will not work,—and they will work satisfactorily in a great many cases,—where we have such an individual and we cannot allay his fear, then we can use satisfactorily and well any of the apparatuses on the market for the purpose of putting the patient under the influence of that drug.

DR. ARTHUR D. BLACK, Chicago:

When any new method of relieving pain is presented, we are inclined as a profession to grasp at that new thing and to use it without sufficiently studying the dangers or the objections which accompany it. I will relate a case in point: there was sent to my office recently a patient with a sinus discharging in the region of the root of the upper right lateral. In examining this sinus with a probe I found a cavity of considerable size within the bone. A radiograph showed a cavity involving the apical half of the root of the lateral, the third of the root of the cuspid, and the distal surface and the apex of the root of the central. The bone considerably beyond the apices of the roots had been destroyed. I learned that a gold filling (it was a very excellent one) had been placed in this lateral incisor about 10 or 12 years ago during the period of cataphoresis. At that time a very successful operation was performed in the preparation of the cavity by the use of cataphoresis. It did not hurt the patient at all. The operation was satisfactory to both the patient and the operator. The radiograph showed that the gold filling was within a hair line of the pulp chamber of that tooth; the pulp of the tooth had died subsequent to the operation because of the fact that the filling was too close to the pulp. If an anesthetic had not been used the pulp cavity might not have been so closely approached, or the danger might have been recognized and the pulp removed. This is an isolated case, apparently successful at the time, in which the patient must lose three teeth as a final result of that successful operation by cataphoresis. Today it is nitrous oxide and oxygen for the purpose of bringing about analgesia. I want to voice my protest, along with Dr. Buckley. I would not recommend the general use of this anesthetic in the preparation of cavities. I think it is wrong to use it in the preparation of more than a small percentage of cavities. There are other things we must consider. We are told that the administration of nitrous oxide and oxygen raises blood pressure. If it does that, how much more does it do for one person than another, and what is going to be the result if it is administered a number of times in several days or weeks for the same person? Suppose that person has arteriosclerosis. Suppose he is on the borderline where a little increase of arterial pressure may rupture a blood vessel, with serious results. It might cause the death of the patient.

In a paper read before the Chicago Dental Society a few weeks ago Dr. DeFord stated that death followed the administration of nitrous oxide in one case out of 300,000. I am inclined to think that is too high, but suppose it to be correct, and suppose that the dental profession of this country used nitrous oxide and oxygen for every cavity preparation that is made, and that 40,000 dentists used this three times a day, there would be 120,000 administrations a day in this country. In other words, we would kill a patient every third day. I believe there is not that much danger, but the indiscriminate use of any anesthetic is attended with danger. There is too much danger in it for us as a profession to use it in that way.

I want to compliment Dr. Harned's general presentation of this subject, carrying out as it does the idea that there is not any one method which should be applied to the large majority of cases which come to us. It is a question of fine judgment as to what we will do for each patient according to the conditions and circumstances in the particular case.

DR. EDMUND NOYES, Chicago:

The paper was an excellent one, and so far as we are smart enough we should use everyone of the resources suggested in it. I have had considerable difficulty in the case of many persons in trying to get into their minds the idea that there is a positive and important difference between a sensation and a hurt. I often let my patients realize that I am depending upon my apprehension of their sensations to guide me in my operations. If you will get patients to think about that difference they are not so likely to have as much pain as they would otherwise. With some people it will help a lot.

The psychological question was alluded to. That question came into my own thought and feeling by the suggestion of patients. Very early in my practice, as much as 40 years ago or more, I began to say to my patients that no man could inflict pain wantonly, unnecessarily, without becoming hard-hearted, but that the infliction of necessary and useful pain is perfectly consistent with the most tender feelings, the most careful consideration for the feelings and comfort and welfare of those we serve, and that a man may grow progressively more careful about the infliction of pain as he goes on in life and has experience. You may let it harden you if you will, but you need not.

DR. TRUMAN W. BROPHY, Chicago:

It must be clearly understood that every anesthetic, no matter what it is has in it an element of danger. If applied to a tooth, there is the danger of getting into the horn of the pulp or doing something in that direction which will be detrimental to the patient. If we make use of a hypodermic syringe with cocaine or any other agent which is carried directly into the circulation there is danger. If you make use of an anesthetic by inhalation, no matter what it may be, nitrous oxide, ether, chloroform, there is in it an element of danger. If anyone gets the impression that he may act indiscriminately in the administration of drugs or anesthetics with a feeling that there is absolutely no danger, I think he should more deeply consider the subject.

A great many years have passed since I began the use of anesthetics. I have gotten along well with them as men usually do, but I never use an anesthetic without feeling there is an element of uncertainty regarding its action.

What does all this discussion mean? The paper is an excellent one; the discussions have been very carefully prepared, and have been presented learnedly to this body, and what do they point to? They point to this, that we are groping in the dark. What we need is an institution for original research work. We need to have all these subjects carefully considered and analyzed by experts who will be able to render a decision as to what the members of the profession may best do. For a man to stand up and say he would always give an anesthetic for the preparation of a cavity in a tooth is wrong. If he says he would apply a local anesthetic for a minor surgical operation, which sometimes causes the patient more pain in the introduction of the anesthetic than to do the operation without it, as I have seen it done, it is wrong. If he makes use of an anesthetic without a knowledge of the general condition of the patient he is doing wrong, and so we need more than anything else in the dental profession today a tribunal to which we may submit all these problems that are unsolved, as the discussions have clearly pointed out, so that we may use these things with comparative safety. We may use general anesthetics in the proper places, it is better to use them for certain conditions, but they must be used with great discretion. You may use such local anesthetics as we may prescribe for certain conditions, but

you should not inject into the circulation of a patient cocaine without the slightest conception of what that cocaine may do. Every man who is engaged in general practice has seen some of the evil results of the indiscriminate use of anesthetics. Those of us who limit our practice to a certain field of surgery have seen the evil results from the administration hypodermically of cocaine into the tissues in dental operations. We have not only witnessed bad results from lack of cleanliness at the point of the syringe, leading to the destruction of tissue, but we have seen impressions made upon the nervous system with evil effects, that time never can efface. These are things we must consider. I am not competent, and some of my friends who have discussed this question are not competent to go deeply into the scientific phases of the subject and make the analysis that should be made, a law to guide the members of the profession in their future course of procedure in the management of anesthetics.

DR. J. E. HINKINS, Chicago:

I wish to say that in the City of Chicago there are many research laboratories in which experiments are carried on with a view of preventing disease. There have been a number of experiments made on guinea pigs and dogs with nitrous oxide and oxygen. In the majority of cases the blood pressure is increased, and the longer the case is carried the greater the increase in the blood pressure. In some cases where the blood pressure is high the hemoglobin is increased, while in other instances where the blood pressure is quite high, the hemoglobin is decreased. The results of the experiments are not ready for publication, but I was present and watched some of the work when it was being carried on. It is being carried on for the advantage of the general medical profession. I want to emphasize the caution that has been suggested by Dr. Black and by Dr. Buckley that it is a serious problem.

DR. G. D. SITHERWOOD, Bloomington: I believe in local anesthesia in its proper place, and what I rose to say is to commend to the members of this society who have not read it a very fine book on the hypodermic method of producing local anesthesia, which has been translated into English by Dr. Riethmuller, the book having been written by Dr. Guido Fischer. It is a book well worthy of your study and consideration. I have had very fine results in these special cases that I could not manage otherwise by using novocain and the hypodermic needle as recommended by Dr. Fischer.

DR. THOMAS A. BROADBENT, Chicago:

I wish simply to give you an idea of what our friends from the south think of painless dentistry. I recently received a copy of the new law passed in Kentucky, and in one section of the law it states very clearly, in speaking of the various causes for which a dental license may be revoked; the State Board may revoke a man's license if he places a sign "painless dentist" over his place of business or advertises painless dentistry in the papers.

DISCUSSION ON THE PAPER OF DR. D. D. SMITH.

DR. J. N. CROUSE, Chicago, was asked to open the discussion. He said: I have listened very carefully to two or three papers on prophylactic treatment but I have never had anybody tell me what it really was so far. If Dr. Smith told us anything more than the polishing of teeth, I have not heard it.

I have in my employ one of the best analytical chemists in Chicago. We have an incubator, and we have been trying to find out what causes dental caries. I do not think we know. I have in my mouth after 20 odd years of immunity some large cavities. My teeth were entirely immune from decay until I lost my son, and have had sickness in my family. Since then my teeth have started to decay very rapidly. They are just as sensitive as they can be about the necks of the teeth, showing plainly the condition of the mind has much to do with the secretions in the mouth. I have seen the same condition in the mouth of a business man who had lost his property or got into trouble. I never heard anybody call attention to this until I did so myself. Attention may have been called to it by others, but it was a new idea to me.

I visited Dr. Smith's office at one time in Philadelphia when there were quite a number of dentists present, too many to make a sufficiently careful examination to describe his method of treatment in an editorial which I intended to do but did not, and it was my hope to get another opportunity.

I really do not know how to discuss Dr. Smith's paper because I have not heard his remedy other than that the prophylactic treatment consists of keeping the teeth clean. The first man to my knowledge who advocated that patients come regularly to the office to have their teeth cleaned was Dr. A. E. Baldwin. He kept a list of his patients and told me he had not a mouth in his practice that was clean, and I thought it was very near the truth. I have

tried to get patients to come regularly to the office, but it is difficult to get them to do so. It takes me from one-half to three-quarters of an hour to get my teeth cleaned before I go to bed, and you cannot get patients to do this. It is a difficult thing unless there is something in the way of a mouth wash that helps to do it.

DR. DON M. GALLIE, Chicago:

Dr. Smith in beginning his paper spoke about dental conditions of today, and it is a serious thing when we stop and think that today, after all these years of what we consider skillful and superb craftsmanship, and with an understanding of the cause of caries of the teeth, and with many guesses as to the cause of pyorrhea, in spite of all we have heard and in spite of all we have done, the fact remains that teeth are decaying more today than ever before in the history of the world. There is something wrong with our treatment. There is something we must understand more perfectly than we do now if we expect to take up the challenge which Dr. Mayo threw at the dental profession a month ago.

If we go into the history of dentistry three thousand years before Christ we will find they were recommending the same treatment for the prevention of caries that Dr. Smith has recommended this afternoon. The Chinese and the Greeks recommended prophylactic treatment, and the prescription they gave to the people consisted largely of things similar to those that we use today, and so it has gone all the way up through the ages.

Goviana, of Arcola, laid down nine canons of dental prophylaxis that practically differ in no way from the canons laid down by Dr. Smith, and all prophylacticians throughout the United States or throughout the dental world, and yet in spite of this teeth are decaying more rapidly and there are greater ravages of dental caries today than ever. If we go back into dental history we should speak of the work of Pickerell in discussing this subject. This distinguished English scholar and dentist, and medallist of the British Dental Association, now located in New Zealand, has given to the world what I consider one of the finest works on dentistry that has ever been given to the dental profession. In his book on "Prevention of Dental Caries and Oral Prophylaxis" he shows that in the primitive races there was little decay of the teeth, yet few of them cleaned their teeth. In a report to the association he gives the results of the committee appointed to ascertain the con-

ditions of the teeth of children throughout the United Kingdom, including parts of Canada and different parts of the British Empire which embraced different nationalities and different races of people, and wherever civilization has advanced caries of the teeth has advanced to such an extent that the tabulations given show that 98 per cent of the children of civilized nations or civilized races are subject to caries of the teeth.

Dr. Smith says the remedy lies with prophylaxis. We are using that, and still the ravages of decay go on. Is it a cure-all? Is there not something more than the simple mechanical rubbing or friction upon the tooth surface? Does the trouble go beyond that? Is it not in the diet? Pickerell in his splendid work has conclusively demonstrated that the thing we have got to look to is the diet, because that has such a control upon the teeth themselves. Food stuffs not only lodge and decompose upon the tooth surfaces, but we must remember the effect the diet has upon the saliva, and the saliva to me is a far greater and more important factor in the question of the promotion of dental decay than Dr. Smith gives it credit for. Dr. Smith, I understand, believes in the virtue of mouth washes; yet the greatest expert in the employ of the United States Government in Washington last summer told us that there was not a mouth wash manufactured that was worth anything. They have no medicinal value whatever, but Pickerell and Gies and others show that the saliva is the guardian of the teeth, the natural mouth wash, whether we are waking or sleeping, and they show that diet is the factor in controlling the flow of saliva, and I believe when you take the thousands and thousands of experiments that Pickerell has made, and consider the careful way in which he has reported them, it will be seen that he has conclusively demonstrated that we can in a measure combat caries of the teeth if we have a better understanding of the saliva. He shows the kind of diet or food stuffs that will do this. Everyone before retiring should eat some kind of fruit of acid reaction, and that will bring on a copious flow of alkaline saliva, and if a man, woman or child, before going to bed, would eat pineapple or some fruit of that kind which will stimulate the flow of saliva, it would have a beneficial effect upon the teeth. Diet and saliva are important factors in bringing about dental caries.

Dr. Smith, aside from the prophylactic treatment, spoke of the

disregard for the life of the dental pulp. It may be that a tooth is not dependent upon the dental pulp for its vitality after a certain time, but stop and think of the after effects. Stop and think of the alveolar abscess that comes from a devitalized tooth. Think of the imperfect root filling. There are many members present who heard Dr. Hanaford read his paper two or three years ago in connection with which he presented slides of imperfect root fillings. Out of the great number he exhibited, only two were perfect. If that is true, if only two root fillings, put in by the best men in the profession in Illinois were perfect, think of what the harvest will be if you remove the pulps of teeth, with 98 per cent imperfect root fillings! We must consider the effects that may come from pulpless teeth and the abscesses that will follow.

DR. ARTHUR D. BLACK, Chicago:

One would need to review the literature of the last twenty-five years in dentistry to properly discuss this subject. Upon what, as a basic principle, does the treatment of any condition depend? Upon what must our progress in the treatment of any condition depend? It must depend upon our knowledge of the pathology, of the etiology, etc., of that particular condition, and others which may be associated with it. With any disease, progress in the treatment of that disease has tended towards prevention just as rapidly as our knowledge has increased of the etiology and pathology. In the treatment of any single disease the first treatment of that disease has usually been directed purely to the symptoms of which the patient complained. Later, with the study and assembling of those symptoms something of a more definite nature as to the etiology and pathology has been gleaned, and then treatment is directed not so much to the symptoms, but more to the pathology and to the etiology until we have a full knowledge of the disease and are able to apply the principle of absolute prevention. Dr. Smith says our knowledge of dental caries has not progressed in twenty-five years.

DR. SMITH: Hardly that, doctor. That statement needs modification.

DR. BLACK: We know a good deal more about the pathology of dental caries than we are making use of in the application of our treatment. There has always been in the practice of dentistry an incomprehensible disparity between the existing knowledge of dental

caries and the treatment that has been applied to it. Even Dr. Miller, who gave us the basis of our present knowledge of dental caries, did not for many years afterwards make use of that knowledge in the treatment of caries. We have before us today all of the facts as related to the etiology and pathology of dental caries that should be necessary for the application of oral prophylaxis treatment. We know all that needs to be known because when we know more than we now know of the pathology of dental caries we will have passed beyond the stage when we need oral prophylaxis in the treatment of caries. But our knowledge of the carious process has reduced it in the matter of practice to three simple propositions which I will mention in a few minutes.

Dr. Miller gave us the full pathology of caries of the dentin. He not only gave it to us as it existed in the teeth, but he produced it in teeth outside of the mouth. His studies form the basis of our knowledge of tooth destruction by caries. Other men have shown us how the waste products of the microorganisms which produce decay destroy the enamel. Dr. Smith spoke of twenty-four square inches of surface of the teeth which we need to consider. It should be recognized that decay never begins in much the larger portion of this twenty-four square inches, but that the beginnings are practically always in certain definite places on each tooth, and the basis of our application of oral prophylaxis or other treatment should be an exact knowledge of the points of beginning. These places of beginning may be grouped into three classes: First, defects in the union of the lobes of the enamel, leaving pits or fissures in the surface. These defects occur in the occlusal surface or close to it. Second, decays which occur in the gingival third of the buccal and labial surfaces, about midway between the mesial and distal angles. Third, decays which occur on the proximal surfaces a little to the gingival of the contact point. We do not have decay beginning in the teeth elsewhere than these places under ordinary conditions. Then the treatment of caries from the standpoint of prevention should be applied to these three areas primarily.

We know that in some mouths which are not kept clean decay does not occur at all; these people are immune to decay and it does not matter whether they clean the teeth or not, so far as caries is concerned. Dr. Crouse has told us that his teeth were immune from decay for many years, but on account of certain changes in his

habits of life and other things, his teeth have become very susceptible to caries. We must understand something of the condition of susceptibility and immunity, but those things we do not know as well as we do these others.

Take the three groups of cases which have been mentioned. Caries does not begin in an occlusal surface of a tooth which is used normally in mastication unless there is a defect in the surface—a pit or a fissure—which permits the lodgment of colonies of microorganisms. There seems to be only one rational treatment for such a condition, and that is to eliminate the defect by placing a filling. Then the tooth should not decay again. You do not need oral prophylactic treatment for that, for it would seem to be more reasonable to eliminate the defect by a simple operation than to endeavor to be constantly cleansing such a defect artificially throughout the patient's lifetime. For this group of cases filling operations are to be preferred, because when the defective places have been made smooth, we have that greatest factor of all in cleansing, the cleansing of mastication, which should thereafter prevent the beginning of caries in such a surface. If it were not for the cleansing of mastication we might have caries beginning on any surface of any tooth.

We know that in the other two groups of positions, on the proximal surfaces near the contact point, and in the gingival third of buccal and labial surfaces, decay occurs under certain conditions and not in others. It has been sufficiently demonstrated that the acidity of the saliva has nothing whatever to do with the beginning of caries in either of those positions or anywhere else in the mouth, and that fact ought to be recognized and accepted by the dental profession. With caries beginning in either of these surfaces, a colony of microorganisms is attached to the surface and covered in on that surface, the acid which the microorganisms produce as a waste product will be held in contact with the surface of the tooth and will not be dissipated in the saliva. If the acid gets out and passes into the saliva as fast as it forms, that surface does not decay. In the large majority of cases the decay begins in the exact positions which have been mentioned. If you remove one of these gelatinoid coverings by brushing the area, a new colony of microorganisms will attach itself in exactly the same point and grow over the same area. Enough has been said of the beginnings and

development of the plaques on these surfaces under the axiom of "extension for prevention" and nothing more in regard to that phase of the subject need be said. We recognize that these decays occur in the mouths of susceptible persons, and that they do not occur in the mouths of persons who are immune. Where there is such a beginning there is a gradual destruction of the tooth substance first in the enamel, then in the dentine along definite lines, which are so similar in the large majority of cases that we cannot overlook the definite mechanical proposition of the gradual destruction of the teeth from those beginnings. We know less well some things in relation to the conditions of saliva under which these growths may or may not occur.

Dr. Joseph C. Michaels of Paris, as many of you will remember, published in 1900 a small book in which he called attention to the fact that there were always present in the saliva of all persons in whose mouth decay was progressing certain crystal forms, which were not present in the saliva of immune persons. It would seem reasonable to suppose that there is a relationship between these things and susceptibility to caries. In New York State the dental profession, through several committees, has also found certain things present or absent in the saliva in relation to susceptibility or immunity. It looks reasonable that the condition of the saliva is directly related to the conditions in which these plaques occur. When we know what those conditions of the saliva are, and are able to modify them by a change of diet, internal medication or something else, we will have less need for oral prophylaxis treatments. We will get beyond the stage where the formation of these things is possible. But we are not there yet, and I want to make what little else I have to say as practical as I can as to the rational treatment which should be applied to dental caries under our present knowledge, which I have endeavored to state as briefly as possible.

I have already mentioned the treatment which should be applied to decays of the pit and fissure group. The decays in the two other groups of areas, the proximal surface and the gingival third, occur under different conditions from the pit and fissure decays, and require different treatment. Of these two, the gingival third area is an easy area in which to prevent the beginnings of caries, because if that area is kept clean; if the building of the gelatinoid plaques and the growths of the colonies of the microorganisms on that area

are prevented by cleanliness, the decay will not occur. I would be ashamed to have children and young adults who are under my observation develop gingival third decays, regardless of any oral prophylaxis treatment which I might give, because the simple and proper brushing of these areas by the patient should be sufficient to prevent caries of these surfaces.

The responsibility for the prevention of gingival third decays should be with the patient. If the patient could apply the same treatment to the proximal surfaces, and if the patient could apply that treatment without danger of injuring the interproximal gum septum, caries of those areas might be prevented also. There are more difficulties in the way of prevention of proximal decay, and there is more reason why there may be an advantage in the use of oral prophylaxis treatments for these areas. The only question that arises in connection with the treatment of these areas is this: how often is it necessary to thoroughly clean these surfaces to prevent the beginning of decay? Take a growth of the microorganisms which produce caries of the teeth, place that growth on culture media, in an incubator at body temperature, and see how the colony will develop in twenty-four or forty-eight hours. I believe it will convince any one that once a month is not often enough to clean these areas, yet the cleansing of the areas ought to be effective in proportion to the frequency with which it is done.

I want to refer to one other thing lest I might forget it. Dr. Smith spoke of the changes that take place in tooth structure as a result of these treatments. It seems to me, that the time is past when the dental profession should continue to insist that there is a material difference existing in the structure of the teeth. There are sufficient experiments by men both in this country and in Europe on record which show that the difference in composition of teeth of people of all ages and in all conditions of immunity and susceptibility is not sufficient to be of consequence, and how with careful laboratory tests of these facts before us, we can assume by the oral prophylaxis treatment we would be able to recognize differences in the structure of the teeth is beyond my comprehension. That teeth may look different as a result of these treatments, I do not deny. Any teeth that are kept clean, or the more and better the teeth are cleaned and polished, the better the appearance of the teeth ought to be.

The paper states that in every instance in which a case has been treated beginning with childhood there has been no decay; that in every instance in which there was inflammation of the gums, the tissues came back to practically normal condition without a single failure. Why cannot we have a statement such as a medical man would bring before a society of medical men if he expected to convince them that a certain method of treatment of any disease was the best treatment to use. Would he not cite a definite number of cases which he had had under his care and tell us something of the progress of these cases, giving a tabulation of the results. I am reminded of a story that I have oftentimes heard Dr. G. V. Black tell upon himself, and I am going to relate it as having a bearing on what I have been saying as to the universal success of this treatment. In the early days he and some other men in this section of Illinois used to go frequently to St. Louis to the meetings with Dr. Judd, Dr. Eames, Dr. McKellops and others prominent at the time, and he went down there one time and showed them a new way to tie a ligature around a tooth. It was a new way of making a knot, and after explaining it to them and saying that in tying the knot in that way it never slipped, but always held, one of the old gentlemen got up and said, "I like the way the knot is tied, but I should like it better if it had just slipped once." (Laughter.)

DR. TRUMAN W. BROPHY, Chicago:

It is difficult for me to account for the president calling upon me to discuss this subject, but I do want to say this: I appreciate very much the fact that an honored member of the profession has seen fit to leave a busy practice and make a trip of 2,000 miles to present a paper to this society. (Applause.) I further appreciate the fact that he has presented a great deal here of value that will make the kind of reading which will be profitable, and that these observations, based upon a long experience and practice, may be found valuable to those who have not been fortunate enough to have heard them.

DR. D. D. SMITH, Philadelphia, (closing the discussion):

When Dr. Black was speaking I thought I would make a somewhat elaborate reply to what he has said, but it seems to be unnecessary. There is nothing in his talk controverting the subject matter as presented in the paper. The chief point of difference between Dr. Black and me is, that his conclusions are from laboratory ex-

perimentation; mine are from the practical stand-point of clinical dentistry. You will pardon me if I venture the opinion that my experience is the more valuable. Should we ask Dr. Black if he has ever put a patient under the prophylaxis treatment according to the method which I have endeavored to describe, I am sure he would say "no." His talk is not the talk of a man who has had experience in oral prophylaxis. Discovery of the benefits of the oral prophylaxis treatment and the fifteen years I have given to the elucidation of it, has given me a knowledge of this matter that far outweighs any theories Dr. Black can advance. He essayed to reach out to you some of his classifications of decay, "zones of decay" he called them. There is little or no information in such a classification and I very much doubt if it would be regarded as science by the scientific. The paper made no reference to the exact point where decay begins, neither did it recognize "zones" of its expression. The real point of the paper was *prevention of tooth decay*; prevention not in one zone, two zones, or three, but if "zones" exist in the teeth, then in all "zones." The oral prophylaxis treatment will prevent decay in all teeth and in all parts of teeth. The paper emphasized the fact that decay begins not within the tooth substance but at the surface; this not as anything specially new, but as a point showing more clearly the reasonableness and common sense of this hitherto overlooked treatment. I set forth in the beginning that Philadelphia dentistry as a whole had set itself in opposition to this whole matter. This opposition grows out of jealousy of your speaker and the success of the method. I stand for the fact that the prophylaxis treatment prevents decay, whether decay is due to bacteria or an acid, or whether its progress is in cycles or in "zones," the prophylaxis treatment applied with common sense prevents it; and it does far more for adverse mouth conditions than merely to prevent decay of the teeth.

Dr. Black suggested that I should have tabulated more cases. If Dr. Black had read my articles on "Systemic Infection Due to Natural Teeth Conditions," and especially the one on "Six Years' Work in Oral Prophylaxis," he would have found tabulation of cases to satisfy and convince the most sceptical. Dr. Brophy spoke of decay in the sulci of teeth. I have never claimed that this treatment prevents all decay under all circumstances. It is not fair to discredit prophylaxis by saying that it cannot prevent all decay in

the sulci of the teeth. I have never claimed that it does this, neither has anyone else, so far as I know. What I do claim is that Oral Prophylaxis, properly applied, will largely prevent the diseases that belong to the mouth and throat. I claim also that it will prevent from 70 to 90 percent of the decay that exists in teeth; that it will prevent decay absolutely in many cases. This is not mere theory; it is a remedy that can be applied, and every man who applies it properly, will bring about restorations and conditions of health that the medical profession with its internal remedies cannot bring about; neither dentistry nor medicine realizes the benefits of this treatment.

Dentistry is ascribing decay to saliva and talks about putting something into the mouth to change the salivary conditions. The saliva, gentlemen, has little or nothing to do with decay of the teeth, notwithstanding what may be said by the laboratory experimenter. The condition of the saliva is not the cause of decay in the teeth. Saliva, if it has influence, is more of a preventive than a cause of decay. What I call the "fluids of the mouth" and what should be known as such, are the real cause of decay. These fluids are clinging to the teeth 24 hours every day. The saliva is in the mouth only when it is wanted for mastication. Taken out of the blood by the salivary glands it is poured into the mouth just at the time it is wanted for moistening food in mastication. It is wholly harmless to the teeth. But the "fluids of the mouth" noticeably the mucus, cling to the teeth at all hours, especially during the night; it is the agent that is doing the work of causing decay. It is utterly futile to think of influencing these secretions through general or local medication. But the prophylaxis treatment, forcing as it does at regular intervals, a change in tooth environment, relieves the teeth from the prolonged effects of all injurious agents whatever they may be. When properly performed this treatment disturbs and breaks up the chemical processes that are secretly working tooth disintegration. If once a month is not sufficiently often to interfere with these acidulated and bacterial accumulations, let it be done oftener. Change of environment, frequent, forcible and complete, is the one remedy, the one preventive for decay in teeth. Talking of influencing saliva will never do it.

Dr. Black talks about decay being of bacterial origin. I assert with great positiveness that decay of the teeth is due far more

to the action of the acids than to bacteria. I understand that Dr. Black, Sr., also entertains the same views. Bacteria may be a result but not a prime cause of decay; but let it be acid or bacterial, if you relieve the surfaces of the teeth, you relieve the liability to decay in a large measure. If the surfaces of the teeth are relieved of infection, an infection that is surely there, it matters but little whether it be acid or bacterial. There is no difference in the practical results; it prevents decay.

DR. BLACK:

I would like you to state why or how you know when you make the positive statement that the saliva has nothing to do with it. How do you know that? May I say also that you misunderstood me. If you think I said the saliva was the controlling factor, or if you think I suggested throwing something into the saliva to modify it, you are mistaken.

DR. SMITH:

I understood you to suggest giving something or doing something to modify supposed salivary activity in causing decay.

DR. BLACK:

You misquoted me, that is all.

DR. SMITH:

How do I know? I may answer I know from my acquaintance with salivary conditions and from my practical experience. First, with reference to mucus and saliva; saliva proper is not found in the mouth except during mastication, therefore, it cannot be an important factor in the causation of dental caries. I understood Dr. Black to say that mastication is an important factor in the prevention of decay.

DR. BLACK:

I did.

DR. SMITH:

How can saliva be an important factor in the causation of decay when it is not in the mouth except during mastication? I contend, and it can be demonstrated, for instance, that there is no saliva in my mouth now, but let me take food in the mouth and the saliva will begin to pour into it. What we have in the mouth is a conglomerate mixture, the *mouth fluids*, as I call it; it is not saliva. Dentistry has yet to apprehend that it is neither saliva, nor bacterial activity that lies at the foundation of tooth decalcification. The

agency, if it can be charged to any one agency alone, that is the cause of decay in teeth, is the *nocturnal mouth mucus*; a viscid acid fluid oozing from the mucous glands, especially when the mouth is at rest. This scanty fluid, secreted especially at night, cements itself under most favorable conditions upon the more inaccessible places about the teeth, where it does its work of disintegration greatly assisted and intensified by the normal heat of the mouth, in which is a constantly maintained temperature of 98.6 degrees.

That old Chicago emanation, to me wholly inconsistent, that would teach us that in ultimate composition, all teeth are exactly alike and as a consequence alike in structural composition, was repeated here today by Dr. Black. Just how that fits in as opposing the truths of oral prophylaxis I do not know, but I do know and every man who handles instruments and operates upon teeth knows, that all teeth are not alike in structural composition. Whatever the scientist may say after his laboratory experiments, we know that there is a consistent and proper classification of tooth material into what may be called hard and soft. There is not only a difference in the behavior of different teeth both of enamel and dentin, under instrumentation, but there is as we all know a marked difference in their resistance of the encroachments of caries.

DR. EDMUND NOYES:

Is it not true as a physiological fact that saliva is secreted constantly, so that we swallow saliva day and night, waking and sleeping?

DR. SMITH:

From the way the question is put I cannot answer it better than by saying that the "mouth fluids" are by no means true saliva. Mouth fluids and excretions from the mucous surfaces follow the course of deglutition. There is a trace of saliva in these conglomerate fluids but they are not mainly from the salivary glands.

Whilst upon this matter, I might with propriety allude to some of the mistakes respecting this much misunderstood secretion—more properly secretions—called saliva.

Possessing a knowledge of these things it is readily understood that saliva per se, has no influence in causing decay of the teeth. Two sets of the six salivary glands opening into the mouth, the parotid and the sublingual, pour into that cavity a fluid as limpid and as harmless to the teeth as water. This fluid is secreted by the

glands named and poured into the mouth, at the time and in the quantity, required for masticating food. It is secreted for immediate use only. The salivary glands are stimulated to activity by the presence of food in the mouth or by some unusual excitant as pain, or the presence of a foreign body in the mouth. This secretion comes for a limited time only. With the cessation of mastication the salivary glands become practically quiescent. All influence of the saliva proper in the mouth passes with deglutition. The secretions named, that from the parotid and the sublingual glands, are practically identical and furnish the only saliva that comes in immediate contact with the teeth. The submaxillary secretion, a heavier, more mucilaginous fluid, does not practically come into contact with the teeth at all except in cases of prolonged or forced mastication. It is prepared by the submaxillary gland and ejected into the back part of the mouth, suddenly and in considerable quantity, with each attempt at deglutition. It comes from the duct of Wharton, which opens just at the side and under the tongue, near the first lower molar. The office of this secretion is not to moisten the food in mastication, but to envelop the bolus in the act of swallowing and assist its passage through the fauces and into the stomach. In ordinary conditions of mastication, it does not touch the teeth in the front part of the mouth.

The physical characteristics of this submaxillary secretion has given the impression to some, that there is a condition of the saliva, that may be designated ropy saliva, and this so called ropy saliva has had ascribed to it a very deleterious action upon the teeth, but such is not the case. The facts are that the submaxillary secretion when normal is always ropy. It is never thrown out except as wanted in deglutition and then in masses as described. This is the saliva that takes the initiative in digestion by converting starch into sugar. The product of the submaxillary gland may frequently be isolated by the stimulus of applying the dam with a clamp on a lower molar. A rope of this mucilaginous fluid as large as a slate pencil, will often result, extending as a rope sometimes from the mouth to the floor. It should be emphasized that this is a perfectly normal state of this secretion and that it never comes in hurtful contact with the teeth. It is as innoxious and innocent as the more limpid fluid from the parotid and sublingual glands. Saliva, let it be said again, does no harm to the teeth in the mouth.

I do not know that I have anything more to say on this subject. I have tried to present it to you in as clear a manner as possible. I hope attention will be given to the *matter* of the paper and that it will be carefully studied. I have presented it for your benefit not for my own.

My work in this matter of Oral Prophylaxis has been for the benefit of humanity and the profession; I have never received anything from any source whatever other than what I have received from my patients in connection with this work. On the contrary it has cost me hundreds of dollars to place it where it is today. I am here at your solicitation because of my love for dentistry. I am not a professor in a dental college. I am not looking for any emoluments from side issues. I am here as an interested practitioner only, in an endeavor to spread a great truth and impress more fully the importance of its presentation in and by the profession. If I have made plain what this method of treatment is, I shall feel amply repaid for making the trip from Philadelphia to Peoria to meet this influential and important society. I predict that Dr. Mayo and other representatives of the medical profession will, in the near future, see and acknowledge that the dental profession has in the discovery and demonstration of the Oral Prophylaxis Treatment, fully measured up to the requirements of the hour and that already "the great step in the line of preventive medicine" has been taken.

AMERICAN DENTAL SOCIETY OF EUROPE, MEETING AT FLORENCE, MARCH, 1913.

DISCUSSION OF DR. BÖDECKER'S PAPER, "A SUBSTITUTE FOR THE MISSING FIRST PERMANENT MOLAR."

DR. W. S. DAVENPORT, (Paris):

In opening the discussion, said the paper was so complete that little remained for discussion, but inasmuch as the author was good enough to mention his (Dr. Davenport's) name in connection with the work he felt obliged to make a few remarks. He had been greatly surprised to notice, not only in his own practice but in the work done by other dentists, how few single anchor bridges or compensating bridges or interlocking regulating bridges had been made

in the past few years. One of the reasons he first undertook such work as the author had done was that in nearly all the double anchor bridges either all the teeth were loose or the bridges had loosened them. Another reason he adopted the principle was that he found it required a great deal less accuracy in making the bridges than in bridges constructed on the classical methods of Peso and Tiersch. Tiersch's work was ideal, and if a dentist had time to construct the bridge according to Tiersch's plan it could not fail. In his own practice, however, he found he had not sufficient time to follow out that procedure and to make the great number of adjustments that were necessary, and he resorted for that reason to the use of points of contact. One point the author had not touched on was that accuracy in the points of contact was not required. In what were called the ball and socket joints it was not necessary to have accuracy. The dentist knew he would have a cleanly point there, and it only touched on one place; the inlays were cemented on to the wrench; the wrench was applied to one foundation; the bridge was constructed across the stream and it was laid on anchor piers that would hold it. Those piers could be made in a simple manner or in a complex way depending wholly upon the articulation. If there was no difficulty in the articulation all that was necessary was a simple rest; but if an examination of the models proved that an interlocking articulation was present something different was needed. He found in the construction of a bridge that no side force was brought to bear on a perfectly articulated bridge, as the author had already described. There was comparatively little side pressure on a perfectly articulated bridge. While the paper was being read he thought the author was not going to touch on the point of double extension, but he did so in his last drawing. If he understood that bridge correctly there was a double extension over the one foundation. Personally he had obtained the greatest satisfaction from the use of the double extension principle, which meant nothing more or less than a wrench with two handles to it, and with perfect articulation it was hardly necessary to have a point of contact. He knew of bridges which had been in the mouth for many years which were carried on three or four teeth anchored to one molar as a point of contact.

DR. K. A. DAVENPORT (London),

In referring to the question of saddle bridges, said it had been

mentioned that there was an advantage in having the rest on the tooth. He had made a few bridges with a single anchorage where he had depended on the rest on the jaw, and he believed that was a feature that dentists should carefully consider. In the case he had in mind of a patient who died in the previous year she had worn such a bridge for five years which was practically clasped from end to end to the jaw. He did not wish to destroy in any way or touch the bicuspid teeth, so he extended a platinum wire along the inside, along the lingual surface extending from the first bicuspid to practically the region of the lateral, and similar pieces of platinum wire rested on the gum after having been well trimmed and extended on the outer side not quite so far. A U-shaped piece of platinum wire was therefore in existence extending anywhere around the teeth, but in no way impinging upon them. The rest was a very comfortable one and although it was about half the thickness of the wire it settled into the gum and caused no disturbance at all. He had stated previously that it did not seem a reasonable thing to do, but he saw no reason why it should not be quite satisfactory when the large number of people were borne in mind who were wearing glasses, pince nez and spectacles that were fastened in the same way. Why should not dentists be able to utilize the same principle in the mouth? He believed that form of rest on a bridge when it had been carefully studied was one of the most valuable ways of fixing bridges.

DR. O. SOLBRIG (Paris)

said he could not allow the paper to pass without saying a few words in praise of the author's work on the anchorage of inlays. The members had heard a good deal already of the anchorage of simple inlays, but the author had given in his paper a scientific description of the anchorage of inlays as bridge abutments, and had almost completely covered the ground. Inlays constructed in any way other than that described could not be as good and they must at any rate possess certain faults. The wrench system, as Dr. Bödecker called it, was the only system that could be used to anchor inlays for bridge abutments in order to obtain permanent success. He also wished to emphasize one point the author had mentioned in regard to putting the strong abutments on the strong teeth. He had found in his own experience that the same inlay put on two teeth, one being strong and the other being loose, loosened the

strong tooth, strange as it might seem. Practical clinical experience, however, bore out that fact. The author had referred very slightly to the question of the use of pivots. No doubt all the members had seen, as he had done, inlays that were not scientifically constructed with many little short pins in them, like pins of a porcelain tooth, which were of absolutely no value. If the construction of the inlay did not grasp the teeth firmly, a little pin would not hold the inlay in; it would only weaken the teeth and be of no use. The splint on the lower teeth to which Dr. Bödecker had called attention was a very interesting piece of work; and the method of preventing the loosening of the teeth was a very clever one. It was, however, sometimes impossible to cover the teeth so well and not to show the gold. In such a case the only possible course was to destroy the pulp and put in a long pivot which would offer, when it was cemented in, retention enough to withstand any pressure of mastication. He also desired to emphasize the question of flexible bridges. He thought it was impossible to use that system often enough. Dr. Davenport had already touched on the point, and had expressed his surprise that more was not seen of that class of work. He thought, however, the bridges gave so much satisfaction to the patients that they did not go to Dr. Davenport; they stayed with their own dentist. Dr. Bödecker mentioned the question of the loosening of the teeth that were on the bridge, and it might be thought that occurred because the teeth were fixed together and that they were necessarily getting loose. One factor, however, had to be considered, namely that a tooth which had to do the work of, say four teeth would naturally expect to have a shorter life than if it had to do only its own work. He quite agreed with the author that a fixed bridge and depriving the tooth of its physiological movement helped to loosen it, but the overwork of a tooth which was on an anchor bridge must not be forgotten. With regard to the question of double-ended bridges on one anchorage, he would like to refer to the subject which he raised on the previous day in his paper, namely, anatomical articulation. The point illustrated how important it was to get a perfect anatomical articulation. It was impossible to bite on one side of the bridge if there was not a good anatomical articulation on the other side; and with the new articulators that at present existed a bridge could be constructed in a very scientific and satisfactory way with perfect articulation.

DR. W. HIRSCHFELD (Paris)

thought the author had partly solved at least a very difficult problem, namely, the construction of bridges with one abutment presented by a loose tooth. When dentists had to construct bridges under that unfortunate condition of affairs it was naturally necessary to try to find a third point of abutment, i. e., if the second molar represented the third point, then came the bridge, then came perhaps a loose bicuspid and the dentist was forced perhaps to find a new point of abutment within the neighborhood of the front teeth. It seemed to him that the author's wrench did away to a great extent with that necessity, because it represented the missing point of rest which it was previously necessary to use within the neighborhood of that loose tooth. He thought that was the great benefit which the members would obtain from the paper that had been read, and that they owed Dr. Bödecker cordial thanks for bringing forward such a simple detail.

DR. H. H. BETHEL (Wiesbaden)

said there was one point in the paper which he would like to have explained. A good deal of discussion had taken place in the past in reference to porcelain inlays, and the advice of men who had been using them a great deal in reference to so-called cup-shaped cavities or saucer-shaped cavities. They explained the dropping out of many porcelain inlays that were put in the front teeth more particularly by the fact that the cavities were not cut deep enough, and the possibility of the cement dissolving out more rapidly where the cavity did not have the so-called cup shape. In some of the author's comparatively little bridges, he noticed that in trimming off the sides of the teeth with the diamond disc the so-called saucer shaped effect was obtained on the outer side of the inlay, i. e., there was comparatively little depth. He would like to know whether Dr. Bödecker had experienced any trouble through the dissolving away of the cement along the feather edges of the inlays which necessarily occurred in cases where the approximal surfaces of the teeth had been cut away with the diamond disc. Personally he had been in the habit of trimming the teeth down with a diamond disc in that way, but he had taken a burr afterwards and deepened the edges to the extent of the depth of the burr, so that he had a line of cement that approached the approximal surfaces of the teeth at a distinct right angle and not straight along. He then found a difficulty in polishing the inlays, but he obtained a perfect line of contour

to the inlay. He desired to ask the author how he overcame difficulties of that nature.

DR. H. L. SCHAFFNER (Florence)

said there was another point that touched the question of articulation to which he wished to refer. It was generally found in such cases that the antagonizing tooth did a great deal and because it had been allowed to stand for some years it was elongated. That was a material difficulty because in that case the bar that was used for the abutment had to be sunk for the resistance, and that could only be obtained by grinding. It was a very complex question to grind a tooth either above or below, and if the second bicuspid was ground the breaking of the two cusps was facilitated. If the upper molar was ground to restore the normal articulation a considerable amount of grinding had to be done in some cases. He desired to ask whether the author made a compromise by grinding partly below and partly above independently of the articulation or whether he strictly held to the articulation and ground the antagonizing tooth. That was a practical point that dentists had to meet in such cases.

DR. W. DUNN (Florence)

joined his thanks with those of the other speakers to the author for his excellent paper on such an interesting subject. As the author had studied the subject so scientifically and practically he would like to ask him whether any investigations had been made on the physiological displacement of the tooth in the bite. Had that been measured? Prof. Arnone of Florence had studied the question of pressure on teeth which was a very important one in connection with bridges; and Dr. Black some years ago made an instrument, a gnathodynamometer in which he measured the pressure of potatoes and different kinds of food on the teeth. Prof. Arnone with a little instrument of his own had proved that a good hard bite often meant a pressure of anything between 50 and 150 pounds on one tooth. The question he desired to ask the author was whether any measurement had been made of the physiological displacement of the tooth in biting.

DR. N. S. JENKINS (Dresden)

desired to confirm Dr. Davenport's statement that in a properly occluded bridge movement was practically non-existent. A certain change was always going on with the teeth, and it sometimes happened with a fully occluded bridge that instead of the

bridge itself being in any way moved or loosened the opposing teeth were somewhat thrown out of position. He quite agreed with the author that it was a matter of very great importance to consider the condition of the roots employed in such a bridge. Dr. Bödecker had referred especially to the danger of vertical movement. Personally he wished to suggest that in many such instances the vertical movement might eventually be found to result only from an irritation of the peridental membrane from removable causes. He had seen some extraordinary instances of roots which had been examined for bridges which had been found to possess that movement, which had been treated for considerable pyorrhea, and which had become absolutely firm and years afterwards had shown no symptoms whatever of again becoming loose. One of the most satisfactory things in bridge work of all kinds, whether small bridges or large bridges, was the sure fact that intelligent previous treatment and continued watchfulness made the bridge a firmer structure in ten years than it was when it was first made; the loose roots with the assistance of the firm abutment improving in their firmness and in their general health.

DR. A. PIPERNO (Rome),

in dealing with the system of flattening the mesial distal surfaces of the models said that Dr. Rhein of New York told him recently that he had used that system of flattening the surfaces since the advent of cast gold inlays five or six years ago, and that he had very successfully applied the principle to the extension of immunity.

DR. H. W. C. BÖDECKER,

in reply, said he was very pleased indeed that his paper had been discussed so fully, and he would endeavor to answer some of the criticisms. Dr. William Davenport said something about articulation, and claimed he believed that the force exerted upon a perfectly articulated bridge was not as great as it was thought to be. Personally he asked the members where the force remained? If he closed his jaw and used 25 pounds pressure, that pressure had to go somewhere. He found that if he had no bridge and there were two or three teeth there the hard enamel was worn away. That showed that a pressure was being exerted on the teeth, and where there was action there must be reaction. The wearing away was not always at right angles to the long axis, so that the tooth was always being pressed down into its socket. The tooth was worn away on an inclined plane, so that the tooth was being pushed at right angles

to that plane. He believed there was considerable movement in the different directions which was dependent upon the force used. If the force exerted in mastication was 30 pounds that amount of force must be passed from the upper to the lower jaw through the tooth, and it was proportional to the number of teeth present. He could not quite agree with those members who said that a perfect articulation gave no lateral pressure to the bridge, because it would be noticed that the inclined planes made on the Eltner method were all inclined, so that the force was not always exerted at right angles to the socket unless of course there was food between the teeth. In that case there might be a compensation on the two teeth in chewing a hard piece of food so that both teeth were equally driven down in the socket, but in ordinary articulation he did not think that was the case. He did not quite catch what Dr. Kirk Davenport said, and whether he intended to convey that the saddle bridge was to be a removable bridge or not. Both the Davenports had done so much on bridge-work that the members ought to be extremely thankful to them for having given so many different suggestions. They had thought out the subject very thoroughly and what they said upon it was worthy of every consideration. He was glad that Dr. Solbrig had agreed with him. They fought the matter out about two years ago when he first mentioned to him the wrench principle of the abutment. Dr. Solbrig then told him he had made a bridge with an inlay upon it, and sure enough he had the mesial side of the tooth cut away, and the other cheek of the wrench instead of being brought over was a pin that was grasped into the distal canal, and then the grinding surface was covered. That approximated to the so-called wrench for round nuts and the broad type of the inlay abutment that Dr. Solbrig made was as sketched on the board. It was a wrench, and so instinctively Dr. Solbrig thought the matter out and for the first time struck the correct solution. He thanked Dr. Hirschfeld for his kind words and as he agreed with him he had nothing to say in reply. With regard to Dr. Bethel's remarks, he did not quite see why he could not burnish the inlay around the whole circumference. He was afraid he could not answer Dr. Bethel's question in regard to saucer-shaped and deeper inlays because it would probably take him an hour to prove his proposition. The chief point was that if it was possible to burnish an inlay against the margin of the cavity and close it at the point where it was not subjected to

the force of mastication it would be found that the cement would not dissolve any deeper than the seam was wide. That was a known and proved fact due to the mucin and saliva being deposited in the seam and protecting it from solution. So far as Dr. Schaffner's remarks were concerned he wished to point out that a model was exhibited from which it would be seen that the tooth was somewhat elongated. In that case he had not ground. The bridge between was simply dropped, and it could be dropped still another millimeter. If it was dropped any further than that, if there was no room to get the bar from the bicuspid, then it was necessary to devitalize the upper teeth to shorten it, putting an inlay on the grinding surface. If the upper molar was too long then it was necessary to devitalize it, and if it was a little bit longer, then a bridge of that sort could be used. In reply to Dr. Dunn, he was sorry to say nothing had been done exactly to determine the physiological limits within which a tooth could move and the amount of force necessary to move the tooth within its physiological limits. For seven years the Dental Society of Holland had offered a very substantial prize which he believed was still open for anybody to construct a scientifically accurate gnathodynamometer of that kind. He entirely agreed with what Dr. Jenkins said about the vertical movement of a root, and that was why he always invariably before using a vertical root as a bridge anchorage took an X-ray photograph to find out whether there was any trouble. The trouble might be an acute one or it might be a passing one. The root might be loose, and, on the other hand, the root might seem very tight and normal, but a chronic condition might exist that would break out into an acute stage as soon as a bridge was put on the tooth. It was always advisable in all roots at least to have an X-ray picture taken to determine their exact condition.

DISCUSSION OF THE PAPER BY DR. AGUILAR ON "SOME CASES OF
MAXILLARY RESTORATION."

PROF. A. CHIAVARO (Rome)

in opening the discussion said that all the members were acquainted with the great energy of the author. The paper contained the results of wonderful work that had been going on for a good many years; and in addition to attending to his big practice Dr.

Aguilar had also studied medicine and had taken his degree. It was really wonderful to consider what the dentist could do towards helping the surgeon, and it really paid to study that question. One of the pictures that had been exhibited showed a cicatrix on the outside of the face. That could have been avoided, because a special saw had been made called the Gigli saw which was just like a piece of soft wire, and with that saw the surgeon was able to remove a part of the jaw bone from the mouth. He always begged the surgeons to perform the operation in that way. It was easier for the surgeon to cut from outside, but from the dental point of view it was better to cut from inside the mouth, so that the prosthetic piece of the dentist would be on a floor which was not a cicatrix; it would remain there better, and the wound would heal up easier and sooner. The restoration of the jaw bone was not only of great advantage to the patient, but was also extremely gratifying in its results to the dentist. All the patients who had been operated on were most grateful to the dentist who replaced what the surgeon had taken away. The surgeon was able to do without the dentist in the adeoplastic substitution of bone, but when he could not do that the dentist was of great help to the surgeon.

DR. F. AGUILAR (Madrid)

in reply thanked Professor Chiavaro for his most generous remarks which he very highly esteemed. He would take a note of what Professor Chiavaro had said about the Gigli saw and he quite agreed with the suggestion that the surgeon should be advised to operate from the inside when dealing with the face. Surgeons were in the habit of cutting without discrimination; they had no idea of a millimeter. On the other hand dentists were in the constant habit of paying attention not to millimeters but to tenths of a millimeter, the making of an incision a tenth of a millimeter too high or too low being a serious matter. The general surgeon, however, did not bear such things in mind, and that was one of the reasons why in oral surgery some of their dental confreres had done such wonderful work. He had the opportunity of seeing Dr. Brophy operate in Chicago in the previous August, and he was amazed to see how carefully he made his sutures—in a way so different from that in which surgeons usually made them. Dr. Brophy had trained himself to do things with his hands that the most able surgeon would not do. A few days later he saw some of

the most famous surgeons in the world perform operations, and he was surprised at the wonderful surgical work that was done, but their manual ability could not be compared with the manual ability of Dr. Brophy, who, although he was sixty years of age, made most beautiful restorations to the face, the lips and the palate of children four or five months old. Dentists ought to contribute to the advancement of general surgery by paying particular attention to operations of that kind, in which they could be of the greatest possible help to the general surgeon.



THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

THE PRESENT STATUS OF SCHOOL DENTISTRY IN CHICAGO.

There can be no question regarding the success of this movement in Chicago. Reference has frequently been made to it in the DENTAL REVIEW, but it may be well to report on the work that has been accomplished to date. This relates solely to the service in the public schools of the city and has no reference to the splendid work done by the Englewood Dental Society in conjunction with the United Charities of Chicago, and to other worthy efforts by individuals for the relief of the poor.

The school infirmaries were started in a small way by the Odontological Society of Chicago under the leadership of Dr. T. W. Brophy. Two equipments were donated by dental supply houses and the service was volunteered by dentists in the vicinity of the Ninety-third Street school where the infirmary was located. Shortly after this a committee was appointed by the Chicago Dental Society and the two societies joined hands in the movement. Funds were raised by the committee for two more equipments and infirmaries were opened at two other schools. At this stage Mr. Julius Rosenwald investigated the movement and most generously volunteered to equip six additional infirmaries and furnish funds to pay the salaries of operators in all ten infirmaries, aggregating \$10,000.00 per year, till such time as the city could be induced to take over the service. The work has been supervised by the dental member of the Department of Health of the city, together with the committee of the dental societies.

In addition to this members of the Chicago Dental Society have volunteered for inspection work among the children of the public schools and up to date have examined 62,047 children.

The service in the school infirmaries has resulted in much tangible good to the pupils, and during the last school year 41,925 operations were performed free of charge for children whose parents were unable to pay for such service. The impression this work is making on disinterested persons who are in a position to observe it is well illustrated by the attitude of the principals of schools where the infirmaries are located. The chairman of the committee wrote each principal asking for an unbiased opinion as to the value of the work for the coming generation, and each one wrote in most enthusiastic terms regarding it. The following are a few extracts from these letters:

"Replying to your letter of recent date, permit me to express my hearty sympathy with the noble work you and your commission are doing. The importance of this undertaking to the health and intelligence of the child is generally acknowledged. The numerous obstacles that you have confronted and overcome in your efforts to carry out this work in our public schools will be repaid by the health of the children and the gratitude of the parents who have gladly availed themselves of the opportunity to have dental work done."

* * * *

"We are very enthusiastic over the benefits derived from the work done by the dental dispensary in this school. So far this year, emergency cases and very badly neglected cases have kept the dentist busy every minute of the school day. Needless to say the improved physical condition of these children has helped them to accomplish more in the school room."

* * * *

"I think there is no question about the need of this dental work in the schools and the good that the service is doing. We find that practically all of the children need attention, and that very few of them have received any. . . . Formerly I had to send many children home with toothache. Now I send none."

* * * *

"In reply to your letter of inquiry I wish to state that the School Dental Clinic has been of very great benefit to the children and to the school. A very large percentage of children in poor districts

suffer from badly defective and decaying teeth. The frequent and often prolonged toothache, nerve strain and other troubles caused thereby results in much absence, and poor progress when the child does attend school. Decaying teeth and ulcerated gums also cause infection of glands and tonsils and other serious troubles, and tend to physical and mental retardation of children. A very large number of poor children have been cared for who, because of parental ignorance, poverty and neglect, would have had no dental care. This has enabled them to attend school more regularly, make better progress, and they will grow up with better health and stamina because preservation of their teeth insures better nutrition. School Dental Clinics in poor districts are much needed and are of very great public benefit."

* * * *

These extracts show conclusively what the work is accomplishing, and they are really more significant than any argument which could be made by a dentist. Mr. Rosenwald's benefaction is proving, even thus early in the movement, to be one of the most practical and praiseworthy that any man could foster, and the aim is now to induce the city to take it over and make it permanent.

THE EDITOR'S DESK.

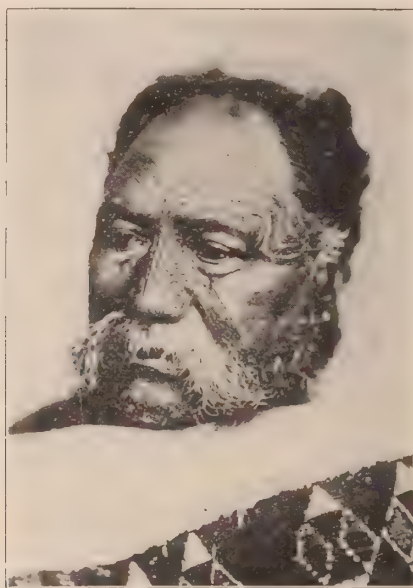
A TRIP TO THE SOUTH SEA ISLANDS. ANOTHER VACATION STORY.

(Continued from the October issue.)

THE MAORIS.

The region around Rotorua abounds in Maori life, and it is a most interesting study to look into the characteristics of these people who are to New Zealand what the natives of Fiji, Samoa, Hawaii and other South Sea Islands are to their respective countries. I have referred before to the pathos connected with the conquering of all these native races by the white man, and of his domination over them, and particularly to the deplorable fact that the native races were for the most part degenerating and becoming fewer in number. It is a spectacle upon which no whole-hearted man can look with complacency, and yet of the Maoris it may be said that

they are the only native race which has not been affected to their permanent deterioration by contact with civilization. The Maoris are today far from a degenerate race, and many of them are highly educated. They are developing some people among them of a superior order of intellect who are taking their places by the side of the white man in the administrative affairs of the country. Some of them are members of parliament, and I had the pleasure of meet-



Native Maori Showing Tatoo Work.

ing in Wellington, which is the capital of New Zealand, a distinguished representative of the race, the Honorable Maui Pomare, who is a medical graduate of the College of Physicians and Surgeons of Chicago, a Member of Parliament, also Minister in charge of Maori Councils, and Minister in Charge of Cook Islands Administration, and of the Department of Tourist and Health Resorts. A race which furnishes such men is not degenerate. It is interesting to note some of the customs and traits which characterized these people as far back as we have any record of them. Their carvings are superior to those of any other savage race, and their taste in the arts has always been wonderful. They made from the

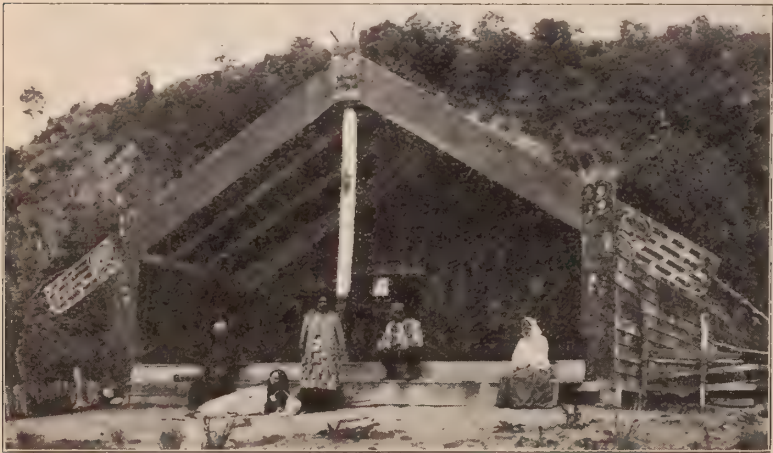
native green stone many implements of unique design, and their great tool, the adze, had the same lines along the beveled edge as our most modern scientific cutting instrument. In their tattooing they demonstrated wonderful ingenuity and mechanical excellence as illustrated in the artistic curves and scrolls and the symmetrical lines. Some of their tattoo work required initiative design of a high order, and manipulative skill above the common. They were ingen-



Typical Maori Woman Showing Tatooed Lips and Chin.

ious to an extraordinary degree, and quick witted beyond belief. As a race they were virile and strong, a fact which the white man learned to his cost when a conflict arose between the two. The records of the Maori war ending in the '60's show the native to have been most resourceful as a strategist and most valorous as a foe. I was told by one of the members of the present Cabinet of New Zealand that if a typical Maori was fighting with a foe and found that the other party had run out of ammunition he would cease hostilities till he had shared his ammunition with his enemy and would then fight it out on an equitable basis. Col. G. W. S. Pat-

terson, F. R. G. S., of Auckland, who has had a very extended experience with the Maoris and has lived much among them, informed me that this very thing happened repeatedly in the Maori wars, and that not only ammunition but provisions were frequently shared with an enemy. In the war with the whites there was an instance where the troops could not cross a certain morass for lack of pontoons, and the Maoris actually took the contract of constructing



Maori House.

the pontoons so that the whites could get over into their territory and fight it out.

Some of their homes today are located along rivers where accommodation to the traveler is scarce, and in each home is provided a bed specially furnished for the entertainment of chance guests who may come along unexpectedly. This bed is never used by the family but is devoted solely to the comfort of strangers. Is not that a lesson to the white man?

In another particular the Polynesian makes the white man look insignificant, and unventuresome. In considering the origin of these people J. Macmillan Brown in his book on "Maori and Polynesian" traces them back step by step across the Pacific to India and it is supposed that they may have come originally from Ancient Egypt. It may be a long stretch of the imagination but I myself was struck

by the similarity between the character of the Maori carvings and some of the Egyptian. In any event it is most certain that these people made very extensive voyages over the ocean of many thousands of miles, and in nothing but open canoes which they had constructed with the most primitive of implements. Remember that this was centuries and centuries ago, and at this very same time the white man of Europe was hugging around the shores of his native land, afraid to venture far out on the ocean. Not till the inventive genius of the white had enabled him to construct larger and stancher vessels than the Polynesian ever dreamed of did he dare to make extensive trips.

There are some strange contrasts to be noted among the Maoris. Side by side with many of the softer graces we find habits and customs suited only to the barbarian. Even yet some of the women tattoo their lips and chin as a mark of beauty, and while tattooing is not confined to barbaric races, yet it would seem that with the present mental development of the Maoris it would not be considered a mark of beauty by any of them to disfigure the face in this way. The Maori has a high appreciation of artistic taste as exemplified in the wonderful robes he makes from the native hemp, decorated with the feathers of birds, and colored to produce a really beautiful effect, and yet this same man was a cannibal up to recent times. We were told at Rotorua by one of the native preachers that there were in all probability individuals still living in that vicinity who had eaten human flesh, and I quote from Col. Patterson of a spot called Spirits Bay in the northern part of New Zealand: "There remain today two long copper Maoris, probably 100 yards long, looking like low broad stone walls. This was the ancient cookhouse of the Maoris, when they had their cannibalistic feasts. Tons and tons of human bones now lie along the beach at this place to tell their tale. Kapowairua was the name of the great pa overlooking this spot, and it was from here that the Maoris made their raids, and brought back captives to be cooked upon the stone furnaces. It is grewsome reading, but nowhere in New Zealand can such evidence of wholesale slaughter be seen as here."

When we see the jolly, happy-go-lucky disposition of many of the natives of today it is hard to believe that they followed a few years ago such repulsive practices as have been attributed to them.

I have not the space to go into the relations existing between the Government of New Zealand and the natives, but be it said in passing that this is one instance—a notable one because of its rarity—where the government has absolutely kept faith with the native. As I view it now the government must have a care lest it fosters the native too much, and develops a spirit of dependency among the people which is not conducive to virility of character. If life is made too easy for any native race—for any race in fact—it too frequently leads to racial debility and lack of stamina. Take away from a native those wild and rugged practices of war and the chase which has been his from time immemorable, and supply nothing in their place—the inevitable result is physical, mental and frequently moral degeneracy. The most hopeful thing I saw in this connection was at Auckland where Maori boys were playing football shoulder to shoulder with their white brothers. I am a firm believer in clean sports for developing the youth of any land and if the keenness, stamina and individual resourcefulness required in sports be carried on into the more mature pursuits of life we need have little fear for the future of any race whether Maori or white.

It is unfortunate that the native race too frequently picks up the vices of the whites more readily than it assumes their virtues. I saw many of the Maori women smoking and I am told that most of them do. Even Beatrice, apparently one of the sweetest of souls, smoked cigarettes. Never, of course, when we were around—her intuition seemed to tell her that was not quite the thing—and yet it was not that she wanted to keep the fact quiet, because I saw her smoking on the most prominent corner of Rotorua. Most of the women smoked pipes and I think Beatrice must have been quite a swell among her people when she aspired to cigarettes. And yet this same Beatrice had the cleanest and neatest house you ever stepped into. As we were going through Whakarewarewa she invited us into her home to sign our names to the register which she keeps of all her visitors, and this house had a carpet on the floor and the walls decorated with pictures. When the Mater complimented Beatrice on the cleanliness of the place she smiled with the keenest delight and merely remarked modestly, "I always try to keep it clean."

But speaking of women smoking reminds me of an incident

which I must relate in passing. I fear I am not very wise to the ways of the world, but the first time I ever saw a woman smoke was on this trip. And it was not a Maori woman either, or an Australian Aboriginal or a Fijian, or a Hawaiian, or a Hindu, but a white woman in the hotel corridor at Winnipeg, Canada. I am not complaining, I am not even criticizing, in fact I am inclined to be grateful to that woman for preparing me for some of the things I was to see on my trip. After this demonstration I confess I was not so greatly shocked as I might have been when I saw the Maori women smoking pipes.

The night before we left Rotorua we attended an entertainment in the public hall given wholly by Maoris, and it was the most interesting evening I ever had. They depicted the native habits of life, the welcoming of one tribe by another—a rather exciting procedure though not so mournful as the welcome given by the dear old lady to her nephew at Whakarēwarewa—the preparation of food in the native manner by the use of heated stones and the natural hot springs, etc. After the food was cooked a couple of the little native girls passed it around among the audience, and while it smelled good we didn't taste any of it. I got a boiled potato for my share, and would have brought it home with me except for the fact that I was already overloaded with curios. Then they sang their native songs, as well as some of our own favorites, "Annie Laurie," "Lead Kindly Light," etc., and some of them had very musical voices. But the most striking performance they gave was some of their native dances which were wild enough and weird enough for anyone's fancy. In some of these they reminded me of the Samoan dances which we saw at Fiji, though the Maoris were more boisterous, and gave you a bit more for your money. At times it was very thrilling.

The dance which impressed me as being the most beautiful was the poi dance. Balls of the native flax, about the size of billiard balls are suspended by a short cord of the same material and the dancer takes one of these in each hand and swings them in rhythm with the music, much as we swing Indian clubs, only the poi swinging is swifter than the club and more varied on account of the shorter length and greater flexibility of the strings. Some of the figures cut in this dance are most graceful and there is a sprightliness and rhythm in it which make it very attractive.

Probably the most beautiful and interesting thing they did was

to illustrate by tableaux their favorite legend of Hinemoa and Tutanekai. This legend is among the most delightful of any race and in view of the fact that we were then on the very spot where the event is supposed to have occurred I am tempted to give a brief outline of it, though I cannot of course go into all of the captivating details. In the middle of Lake Rotorua several miles from the shore



Maori Girls.

we saw a beautiful island called Mokoia, and on this island lives a Maori tribe as in the days of old. Canoes still pass back and forth between Mokoia and the mainland, because the island is fertile, and is a favorite place of abode. Many years ago there lived on the mainland a powerful chief called Umukaria who had a beautiful daughter Hinemoa. (If this Hinemoa was as beautiful as the girl who took her place in the tableaux I can well believe all the details of the legend.) On the island lived another tribe to which belonged a young man named Tutanekai. The inevitable happened. Just because Hinemoa's tribe was somewhat higher in rank than Tutanekai's tribe and because Tutanekai was not the oldest son of his father and therefore not entitled to aspire to her hand, the two had to fall in love. Umukaria was warned, and ordered all the canoes pulled up from the shore each night lest Hinemoa should escape to her lover. But did you ever know it to fail? Tutanekai was in the habit of playing his flute in the evening (I heard a native

play the flute at Rotorua) and the notes floated softly across the lake to Hinemoa. One night she quietly strung together with strips of native flax some dry gourds, and using these as a buoy she sprang into the dark water and began a swim which is famous to this day. The island looked like a black speck in the distance but she swam bravely and after many vicissitudes and overcoming great obstacles she landed near one of the far-famed bathing pools where the hot spring of Maikimikia welled out amongst the rocks on the shore. Here she rested till one of Tutanekai's slaves came down to the lake to get some water for his master. Hinemoa hiding her identity in the dark asked for a drink of water. On receiving the calabash of water she purposely let the vessel fall and broke it. The slave went for another and she again asked for a drink and again broke the calabash. When the slave reported this to Tutanekai he was angry and sprang toward the shore determined to punish the culprit. You know the rest. This pool has ever since been called Hinemoa's bath.

If anyone doubts the probability of this Maori maiden swimming so far, it is only necessary to refer to an incident which actually happened some years ago. When the tribes were at war with each other the grandmother of the present Member of Parliament. Dr. Pomare, found herself on an island with her babe, and fearing that the island was to be captured by the enemy she determined to swim to the mainland which was eight miles away. She tied the babe to her back and accomplished the marvelous feat of reaching the land in safety, carrying her babe the entire distance.

The last tableaux that night at Rotorua showed a stalwart youth standing beside the beautiful modern Hinemoa and folding her in his exquisite mantle of native design—a sight not soon to be forgotten.

C. N. J.

(To be continued.)

BOOK REVIEWS.

GOULD AND PYLE'S POCKET CYCLOPEDIA OF MEDICINE AND SURGERY, SECOND EDITION, REVISED, ENLARGED AND EDITED BY R. J. E. SCOTT, M. A., B. C. L., M. D. 155 pages. Price \$1.00. Published by P. Blakiston's Son & Co., Philadelphia, 1913.

This little volume contains in condensed form the most significant things which a dentist should know about medicine, and it is a

pleasure to pick it up and review the various subjects. No words are wasted in preparing the volume and the reader may be assured of receiving the greatest amount of knowledge with the least possible effort. It is a tidy little book which, as the title indicates, may be conveniently slipped into the pocket and referred to at will.

JOHN HUNTER AND ODONTOLOGY, By J. F. Colyer, L. R. C. P., M. R. C. S., L. D. S., Dental Surgeon to the Royal Dental Hospital of London and to the Charing Cross Hospital, etc. 161 illustrations, 214 pages. Published by Claudius Ash, Sons & Co., London, 1913.

In the preparation of this volume Dr. Colyer has placed the dental profession under a lasting obligation to him. The name of John Hunter will always be associated with the early development of the science of Odontology, and Dr. Colyer has brought into orderly array the most significant facts regarding his life and work. Hunter was born in 1728 and died in 1793, leaving as his chief legacy the foundation of our knowledge of dental anatomy, human and comparative. It has been Dr. Colyer's pleasing function to present a picture of Hunter's life and then to deal with the subject itself under the broad headings of "Teeth in General," "The Anatomy of the Human Teeth," "The Pathology of the Teeth," "Hunter's Observations on Comparative Dental Anatomy," and concluding with "The Pathology of the Teeth in Animals."

This is one of the most unique volumes that has fallen into the reviewer's hands in many a day. It is intensely interesting not only in its scientific aspect but in the portrayal of Hunter's character and his many peculiarities. The publishers have produced one of the most sumptuous volumes which has ever been presented to the dental profession and are deserving of a very cordial support.

THE AMERICAN TEXT-BOOK OF PROSTHETIC DENTISTRY. In Contributions by Eminent Authorities. Edited by Charles R. Turner, M. D., D. D. S., Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania, Philadelphia. New (4th) edition, thoroughly revised and rewritten. Octavo, 856 pages, with 900 engravings. Cloth, \$6.00, net. Lea & Febiger, Philadelphia and New York, 1913.

This book has taken a commanding place in that field of dental literature which has for its function the promulgation of practical ideas. The name of the editor and his splendid list of contributors is sufficient assurance that the book will be well worth studying, and in the new edition there has been a careful revision of the text and the addition of much new illustrative matter. It is difficult to particularize when considering this book, but probably one of the most interesting chapters is the one on "The Human Dental Mechanism" by the editor. This is dealt with in its relation to structure, function and temperament, and forms a most entertaining subject to read. In fact, the entire volume is most commendable in every way.

ANATOMY, DESCRIPTIVE AND APPLIED. By Henry Gray, F. R. S., Fellow of the Royal College of Surgeons; lecturer on Anatomy at St. George's Hospital Medical School, London. New (American) edition, thoroughly revised and re-edited, with the ordinary terminology followed by the Basle Anatomical Nomenclature, by Edward Anthony Spitzka, M. D., Director of the Daniel Baugh Institute of Anatomy and Professor of General Anatomy in the Jefferson Medical College of Philadelphia. Imperial octavo, 1502 pages, with 1225 large and elaborate engravings. Cloth, \$6.00, net; leather, \$7.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1913.

Gray's Anatomy is a synonym for all that is comprehensive and classical in human anatomy. For more than fifty years it has maintained a distinguished lead as the greatest of all works on human anatomy. The present volume will tend to augment its reputation in this respect, and there can be no question of its cordial reception by students of anatomy everywhere. The coloring in the illustrative work adds much to the attractiveness and utility of the book, and the descriptive text is improved over previous editions by condensing and clarifying it to make it more readable. No student can afford to be without this work, and the practitioner, whether medical or dental, will find his time pleasantly and profitably spent by running over its pages and reviewing his anatomical knowledge at the fountain head of the science.

CORRESPONDENCE.

Arnhem, Holland, September 15, 1913.

Dear Doctor :

After your call under the heading Editorial of this September number of the DENTAL REVIEW, I feel I may be able to give a little suggestion, which could serve as a substitute for the "missing link," be it partially or totally.

It consists in the use of a combination filling of cast gold and silicate cement. For a good many cavities the area is too much extended to save permanently with silicate cement, but by using cast gold for the stress-receiving back of the filling, the labial part may be filled with this material.

The main use for this combination filling is found where the cavity involves a part of the incisal edge. The preparation of the cavity is the same as for a gold foil filling with a lingual step, but with perpendicular walls. Oftentimes a post in the root canal adds to the permanency of the fixture. After the missing part of the tooth is built up with wax, the front surface is taken from the wax model to a certain depth, leaving well undercut margins all round. When the inlay, received from this wax model, is put into place, there is only a labial cavity left to fill with silicate cement and as these cavity walls, consisting on one side of tooth structure and on the others of gold, are good and strong, the filling material can be burnished well against the margins in order to give it the greatest possible permanent consistency.

I hope these lines may be of some use for the profession and remain

Respectfully yours,

M. J. HOMAN.

CRITICISM LACKS PROOF.

Regarding Dr. Cruise's criticism of my views upon the action of formaldehyd, appearing in the September number of the DENTAL REVIEW, I wish to say that, in undertaking this study I was not unmindful of the adverse criticism which such an undertaking would call forth, for various reasons and from various sources, but as I have long ago realized the necessity of a change in the method now in vogue, and after some investigations in this direction, I have

become so very optimistic regarding the possibilities of an improvement that I am in nowise disheartened by the utterances of Dr. Cruise.

After a careful search of his entire criticism I am unable to discover wherein the doctor has presented a single thought which reveals an error in my investigations. True it is that I have been attacked on the charge that I am subject to mistakes. Dr. Cruise should bear in mind that it matters not what training one may have had or how fairminded one may be, it is impossible to escape this tendency, but to censure anyone for blunders without offering proof to show that an error has been made, is, I think, very unjust, and no good to the critic or to the profession can ever result from such an endeavor.

Surely Dr. Cruise does not concede that merely an expression of his opinion is sufficient to convince the profession that my views upon this subject are not worthy of respect or confidence. The dental profession is now sufficiently scientific to require exact scientific proof to influence its members in forming their opinions and it would therefore be for the benefit of dentistry as well as for Dr. Cruise himself that he at least offer some proof for his dogmatic condemnation of my efforts.

I sincerely hope, however, that if time does not "forbid" Dr. Cruise from "going into detail of scientific reasons for this contention" that he will show why this thing is "so scientifically incorrect," for I, too, "desire that the truth prevail."

I also wish to say, not in a spirit of sarcasm, but in a sober minded, honest manner, that I have not undertaken this matter with the view of displaying any special qualification for this line of work. My purpose is rather a dutiful one, and the statements which have appeared or will appear hereafter are only my honest convictions.

CARL J. GROVE, D. D. S.,
St. Paul, Minn.

DR. BUCKLEY'S REPLY TO AN ARTICLE ON THE USE OF FORMOCRESOL.

Dear Mr. Editor:

In replying to the article in the October DENTAL REVIEW on "Why Formaldehyd Preparations Are Contraindicated in Septic Root Canals—With a Practical Scientific Method for the Treatment

of Putrescent Pulps," by Carl J. Grove, LL. B., Ph. G., D. D. S., it is only fair that I explain to my readers why I have not replied previously to Dr. Grove's articles in the *Dental Cosmos*, to which he constantly refers and seemingly attaches so much importance.

The controversy between Dr. Grove and myself first started from a purely personal matter and I much preferred not to make it public. Several years ago I wrote an article in which I explained an original chemical theory as to the cause of tooth-discoloration from pulp decomposition. Some time after the appearance of this article Dr. Kirk of Philadelphia, wrote an article in which he disagreed with certain lines of thought advanced by me. Dr. Kirk and myself argued the questions back and forth in the Journals for some little time, neither seeming to be able to convince the other. It was shortly after this that I received a personal letter from Dr. Grove accompanied by a manuscript in which he had endeavored to show that Dr. Kirk was in error, and trying to substantiate my views. In this manuscript, however, Dr. Grove had used my language almost verbatim in explaining the rôle which ammonia is supposed to play in the process of tooth-discoloration from pulp decomposition, and my name was not mentioned in the entire manuscript. Dr. Grove explained in his letter that his object in not giving me credit or not mentioning my name was that, we having been classmates in college, Dr. Kirk might find this out later, and his article would not be as strongly in my favor as though it came from an independent source. I showed the letter and manuscript to my associate, Dr. Elliott, who was also a classmate, and asked him what he thought of it. His reply was terse and to the point. "That is the limit. I would not stand for a thing of that kind." Taking my friend's advice, I wrote Dr. Grove, saying that it was not customary to use the published writings of another without giving credit, and while it made no particular difference to me personally, I did not think he could afford to do a thing of this kind. This I must not have done very diplomatically, for I heard nothing further until a year or so later when I first lectured at St. Paul before the Minnesota State Dental Society. After my lecture and the discussion, Dr. Grove quietly took me to one side and said that he did not agree with all of my reasoning. I asked him why he did not take part in the discussion, and he replied that he preferred not to do so.

Shortly after this his first article appeared in the *Dental Cosmos*. This, as my readers know, I ignored, and heard nothing further until last January, when I was the guest of the Minneapolis Dental Society. I had never heretofore taken Dr. Grove seriously, nor did I believe that he so considered himself. He was present in the afternoon at the clinic in Minneapolis, but he did not attend the banquet at which I lectured in the evening. His explanation, as given to me privately the following evening, was that he had read a paper a few weeks before at the St. Paul Dental Society and that another paper would appear soon in the *Dental Cosmos*, in which papers he had disagreed with me on the use of Formocresol, and he knew that if he was at the banquet someone would call on him to discuss my lecture, which he did not want to do. When I was a boy in the country school I remember reading something about a wolf in sheep's clothing, but I must not digress. I only regret that it seems necessary to burden my readers with this uninteresting matter. In this private conversation I told Dr. Grove that I was sorry he did not attend the meeting the evening before and say publicly what he had in his mind. That if he could show that I was wrong in my reasoning or deductions I would gladly accept his views. Shortly after my return from Minneapolis, to be exact, February 19, 1913, I received a letter from a dentist in Minneapolis, at whose invitation I appeared before the Minneapolis meeting, saying there was some little controversy between different men in St. Paul and Minneapolis as to who was in the right—Dr. Grove or myself. In reply to this letter I wrote the dentist saying that I would gladly come to Minneapolis or St. Paul and debate the entire matter with either Dr. Grove or his professional advisors, as I knew he had help in the matter. Whether or not the proposition was ever submitted I do not know, for I heard nothing more until the appearance of Dr. Grove's article in the October DENTAL REVIEW.

Now I am going to reply to this one article and then I am through, unless Dr. Grove produces something of real scientific merit, when I will gladly acknowledge the worth of his writings. Life is too short and I am entirely too busy with other matters of real importance to reply to a man who has proven himself to be as unscientific and unfair as he is inconsistent and unreasonable.

In my reply I am going to try and eliminate personalities as

much as possible; but it is only fair, since Dr. Grove seems to delight in placing after his name a long list of degrees, to ask where and how he received the degree of LL. B.? He was my classmate in the Pharmacy School and again my classmate, and for one year my roommate, in the Chicago College of Dental Surgery. Therefore, those of us who knew him in school know well where and how he got his Ph. G. and D. D. S. degrees, but we wonder where and how he got the other degree. Dr. Grove flaunts these degrees in order to dazzle his readers, who have never heard of him before, into the belief that at last they have found a well-read, liberally-educated, and truly scientific man, but readers need not be thus deceived. With these "foregoing strictures" which "are not without justification," I will proceed to apply a few simple tests in my analysis of his paper.

The first sentence in the article is as follows: "For some time past an attitude of satisfaction regarding the methods of treating septic canals has been manifested, and as a natural consequence, activity in improving this branch of our profession has been wanting." Personally I have never found my profession satisfied with any remedy or method which I have given to it, unless *results* could be obtained by using the remedy or following the method. The only reason that "satisfaction has been manifested" by those who have *properly used* the "Buckley Method" of treating septic root-canals is that *results* have been obtained. Nothing else will give satisfaction in any line of human endeavor. The "activity" exhibited by Dr. Grove "in improving this branch of our profession," which so much "has been wanting," will be shown later when I refer to the remedy which he refers as a substitute for *Formocresol*. The article continues: "After the introduction of Formocresol for the treatment of putrescent pulps, I employed the mixture for this purpose for a number of years, not recognizing the deleterious action of formaldehyd." The only way that I could account for a man using Formocresol for a number of years, in the careless manner in which Dr. Grove must have used the remedy, was that his patients recognized his carelessness and never returned. Therefore, he was not able to "recognize the deleterious action of formaldehyd" until he lost his practice. I never before knew the reason why Dr. Grove gave up dentistry for a time, after practicing a few years

in Owatonna, Minnesota, and later took up the practice again in the out-lying district of St. Paul. It was doubtless in the interim that he had time to "pursue an investigation which led him to regard the action of formaldehyd with much apprehension."

Again, the essayist states that "in the presentation of the formaldehyd method of treatment, the chemical theory has always received special emphasis." Dr. Grove here shows that he has been as careless in reading my writings as he has been in using my remedy. The facts are that I have always emphasized the precautions to be observed in the use of Formocresol, so much so, in fact, that many at first were afraid to employ the remedy. In my lecture at Minneapolis last January Dr. Kramer in the discussion claimed that I went entirely too far when I objected to the use of formaldehyd pastes for filling root-canals. This lecture and discussion is not yet published. No one denies that formaldehyd has irritating properties or that it will not produce inflammation (soreness) if the gas comes in contact with the live healthy tissue in the periapical region. Neither does any one doubt that albuminous or gelatinous matter is not toughened or hardened when acted upon by formaldehyd. It was because of this property that I suggested the addition of modifying agents to correct the irritating qualities of the gas. Dr. Grove objects to this, claiming it cannot be done. He says, "all who have employed formaldehyd preparations for the treatment of septic root-canals have no doubt observed that irritation is frequently produced by this gas; likewise, those who advocate this method recognize this disturbing element, but maintain that the action is altered by the anodyne properties of the ingredients contained in the mixture." Now, no sane practitioner could be lured into using a remedy which would "frequently produce irritation" and thus make the tooth sore and responsive simply because I claimed that by the addition of an anodyne the irritating property of formaldehyd was modified. The truth of the matter is, as backed up today by the clinical experience of thousands of men, that the cresol does correct the irritating property of formaldehyd, and that *Formocresol can be used in a putrescent root-canal without the slightest manifestation of soreness*. In fact, if the infection in the periapical region is not too severe, sealing of the remedy in the canal hermetically will correct the soreness. I have never intended

to have the formaldehyd gas, which is constantly generated from the remedy, escape through the apices of the roots in these cases; but I contend that the remedy sealed in a putrescent canal will act upon the intermediate and end-products of pulp decomposition, as well as kill the bacteria present; and, if this is done, Nature will soon control the infection in the periapical region. In his article in the *Dental Cosmos*, to which he refers, Dr. Grove contends that Formocresol does not act chemically upon the contents of a putrescent canal. He admits that the remedy can be hermetically sealed in such a tooth, but would lead you to believe that the reason you get results is that the formaldehyd gas diffuses through the contents, kills the germs and thus checks the putrefactive process, when no further mephitic gases are produced. This is correct so far as it goes; but if this is all the remedy does, what, let me ask, becomes of the odor that was in the canal? My experienced readers know that you can take a tooth, from the canal of which we get the characteristic odor of a putrescent pulp, and after one treatment of Formocresol, no odor can be detected, unless perhaps it is in the extreme apical end of the canal. I propounded this question to Dr. Grove last January in my private conversation with him, this being the only opportunity I have had, as he did not care to discuss the matter with me on the floor before an audience, and his reply was that, of course, Formocresol was a deodorant. Now the odor comes from several of the intermediate products (ptomains) and end-products (hydrogen sulphid) and if Formocresol destroys the odor, it certainly acts upon these products. It is not necessary for me to argue at this late day with anyone as to the value of Formocresol for putrescent pulps and dento-alveolar abscesses. The remedy has a record and it speaks for itself.

Let us next enter Dr. Grove's dreamland. But tread lightly, lest we wake him up. The article reads: "The fact that formaldehyd possesses irritating properties, is not the only objection to its use. Following irritation, inflammation often follows, and whenever this occurs there is an exudate thrown out from the affected tissue. This fluid contains a high per cent of albumin, and what results from the action of formaldehyd upon albumin is shown in the bottle. (See Fig. 1 in Dr. Grove's article.) It becomes an insoluble substance. If formaldehyd is placed in canals containing this ex-

travested (?) fluid, it will at once be transformed to an insoluble mass, closing the root-canals, or if the fluid has accumulated at the apex it becomes a source of constant irritation to the tissue in that region as shown in this bottle. Contained in the coagulated substance, some formaldehyd undoubtedly exists. We know that formaldehyd is capable of producing inflammation and sloughing. It is hardly necessary for me to mention that very serious conditions might be produced from the existence of this substance at the apex."

Think of it! Using Formocresol for a number of years before he imagined these disastrous results. Did I say "imagined"? Yes, for Dr. Grove has questioned my deductions which were not only based upon laboratory experiments, but sustained by many clinical tests. Before I gave Formocresol to the dental profession I had not only used it in my own practice for over a year, but had also given some of the remedy to Drs. Hart, J. Goslee, Robt. J. Cruise, and Elmore W. Elliot, all successful practitioners in Chicago, as my readers well know, and each of whom had reported as good results as I had obtained myself. Yet Dr. Grove attempts to prove his contentions by laboratory work which he illustrates showing conditions that could only be observed by the wildest stretch of a flighty imagination. How absurd to assume that a tooth, with nothing in the canal except the remedy sealed therein, implanted in a bottle filled with egg albumin is analagous to one found in the mouth, containing a putrescent pulp. My readers are intelligent men and women, and I am certain that I need not further discuss Figure 1. But the articles continues: "If the canals are closed by the coagulated substance, as in the drawing (Fig. 2), it will be impossible to further treat the pathological condition existing in the region of the apex. * * * The drawing (Fig. 3) represents my idea of what the condition is." Dr. Grove seems happy, and in kindness I should let him dream on; but in the interest of truth, I will show that his "idea" does not amount to a great deal, to say the least.

I have no reasons for changing my views on the coagulation of albumin in connection with the treatment of putrescent pulps and dento-alveolar abscesses since reading my article in 1904 before the Fourth International Dental Congress held at St. Louis. It was

in this article that I first gave the results of my experiments and observations with Formocresol to the dental profession. On this point I said:* "Those of you who have read the literature of our profession for the past ten or fifteen years know that the opinions of many investigators in regard to the penetrating or non-penetrating power of coagulating agents in a putrescent root-canal are many and varied. The reason for this variance of opinion I have never been able to understand. Many of the leading men of our profession have objected to the use of coagulants in the treatment of putrescent pulps and abscesses without a fistulous opening, for the reason that such agents will, in their opinion, coagulate the albumin present and thereby prevent their penetrating the contents, and that the coagulum is also liable to close the small root-canals. On the other hand, there are many who assert that albumin, though present, does not prevent the penetration of coagulating agents, and that such takes place throughout the pulp-chamber and root-canals, as well as in the dentinal tubuli. Both sides attempt to sustain their theories by many laboratory experiments. Those who object to coagulants in the treatment of these cases adduce the coagulating action of such agents upon the albumin of a fresh egg. But the conditions here are not at all similar. Should an egg which has undergone the process of decomposition be substituted for a fresh egg, it will be noticed that no coagulum is formed—for the simple reason that the proteid constitutes (coagulable material) have lost their identity by chemical decomposition, and new compounds with entirely different properties have been formed. This explains, too, how the advocates of the penetrating power of these agents have seemingly succeeded in sustaining their theory. It has been shown that coagulating agents, in contact with egg albumin in sealed capillary tubes, penetrate the entire mass; and that the action of these agents is self-limiting only up to the quantities used. By sealing these agents in extracted teeth with the cementum removed and embedded in plaster, it has been shown also that they penetrate the entire tubular structure. These experiments prove conclusively that coagulants will penetrate the putrescent mass of a root-canal, but do not prove, to my mind, that albumin as such is here present. I am not anxious to antagonize either side in this controversy, but

*Dental Cosmos, page 226, Vol. 47, 1905.

it is a subject, as I have previously mentioned, in which every practicing dentist must be interested, and yet one which seems never to have been successfully settled. It seems to me, therefore, that we should not be over-anxious to criticize each other's views, but each should study the chemistry of pulp-decomposition and thereby acquire a knowledge of the chemical facts relating thereto. It is by this method only that 'this subject can be scientifically mastered.'

Now this idea of the probability of coagulating albumin is neither Dr. Grove's nor mine. Whether it be good or bad, as the older men in the profession know, it belongs to the former Dr. A. W. Harlan, our old teacher of *Materia Medica* and *Therapeutics* in college, and who, until a few years before his death, always objected to the use of coagulating agents in treating septic pulps, especially if there was an infection and pus in the periapical region. Let us see how this fair, liberal and broad-minded man changed his mind and accepted my views on the subject, after studying my writings. In discussing my above mentioned paper, Dr. Harlan said:* "Dr. Buckley's presentation of this subject, so far as I know, with reference to formalin, putrescin, and neuridin is in consonance with Aitken's '*Animal Alkaloids*' and Klein's '*Micro-organisms*,' both of which works I have had occasion to consult, not recently, but in times gone by. We all think we are making great progress, but you must remember that it takes years to demonstrate a thing. As Dr. Cassidy said a little while ago, we have to rearrange our views. I remember very well it was thought formerly that all you had to do was to open into a putrescent pulp and put a little carbolic acid in there, and that was all. Or, if that were not done, some iodine and creasote were applied and that was considered all that was necessary. Now we know, as Dr. Buckley has clearly demonstrated, that after the decomposition of the pulp takes place, there is no albumin in the pulp-chamber—there is only albuminous matter in the pulp itself before the decomposition has taken place; and so if carbolic acid, or creasote, or zinc chlorid be applied shortly after the death of the pulp and before decomposition has begun, it can coagulate and shrivel it, and perhaps if the agent be powerful enough it may convert it into an ash and incinerate it, perhaps absolutely destroy it. But the men who have been working on those conditions have been mis-

**Dental Cosmos*, pages 229, 230, Vol. 47, 1905.

taken. A coagulating material will not coagulate something that is not coagulable. Dr. Buckley has made that clear." * * * "Therefore it is a mistake to suppose that the instant that you put carbolic acid or creasote or zinc chlorid or silver nitrate in a tooth it will penetrate immediately through the dentin before the process of decomposition has begun. That was the point I was making; and Dr. Buckley deserves our thanks for presenting in such a clear and concise manner the idea and fact that you cannot coagulate something that is not coagulable—because it is not there, it has been decomposed, and it is a new substance that you must deal with."

"The conclusion Dr. Buckley comes to with reference to the admixture of tricesol and formaldehyd in 40 per cent solution, according to chemistry, is absolutely correct. I have nothing to say about that except that I thoroughly and heartily commend that portion of the paper as well as the other portions; and I know just as well as he does, and Dr. Hodgen, and my old friend and teacher, Dr. Cassidy, that formalin and formaldehyd are among the most irritating substances that can be brought into contact with the soft tissue, and therefore you have to modify them. And I also commend the statement that those things must be sealed as hermetically as possible; they are so freely soluble in water that they would be *nil* unless they are sealed."

I have quoted at some length from my paper and Dr. Harlan's discussion, because, if Dr. Grove's drawings represented anything nearly like the actual conditions, it would be a serious matter; but from the above and the clinical experience of thousands of men who are using Formocresol today my readers know that such is not the case.

I am going to skip a page now where the essayist endeavors to explain his belief as to the cause of many abscesses. Any effort to prevent septic conditions about the apices of the roots of teeth should be commended. Let me take up for a moment his chemistry. On page 1001 he says: "Some may feel justified in using formaldehyd on the supposition that a chemical reaction occurs between this gas and the products of pulp decomposition. As I have endeavored to show at a previous writing that the chemical theory is erroneous, I shall not tire you with a review of the subject at this time, but I do wish to prove by a very simple experiment that a

chemical reaction between formaldehyd and hydrogen sulphid positively does not take place. Dr. Buckley maintains that free sulphur and methyl alcohol are thus formed. If a chemical reaction does occur between these substances when they are brought together a yellow precipitate, free sulphur, will be suspended in the liquid. As to the formation of methyl alcohol, I wish to state that I have made many careful tests of this solution for alcohol, but not even a trace was ever found. Dr. Buckley never has to my knowledge found alcohol by any chemical test of the solution, but merely assumes it to be formed, because upon the rearrangement of the atoms involved an equation representing methyl alcohol and the element sulphur was obtained. As further evidence that alcohol is formed Dr. Buckley states that 'upon evaporation of the solution, a substance burns with a blue flame.' While this flame does resemble the burning of alcohol, hydrogen sulphid also burns with a blue flame. Since tests for alcohol have failed to disclose its presence, and as there is a decided odor of formaldehyd evidenced upon the evaporation of the solution. I maintain that hydrogen sulphid being only suspended in the liquid is driven off by the application of heat, and that it is this gas which burns when ignited, not methyl alcohol. If formaldehyd was transformed to methyl alcohol, as claimed by Dr. Buckley, there should be no odor of formaldehyd upon the evaporation of this solution."

Here, as usual, the doctor is looking through magnified lenses, for to him a small mole-hill appears like a mountain. As a matter of fact, both hydrogen sulphid and carbon dioxid, in the presence of moisture, would act upon the fetid ammonia bases and cease to be active. Of the two gases, hydrogen sulphid is the more important, for it is more offensive, and more irritant and poisonous to animal tissue. The body knows well how to dispose of carbon dioxid as it is a natural waste product of metabolism. However, neither gas is of sufficient importance to be given much consideration, other than the pressure they might possibly produce if confined for a time in a closed canal. Dr. Grove accuses me here of "merely assuming" that a reaction takes place between formaldehyd and hydrogen sulphid. He claims that he "has made many careful tests of this solution for alcohol, but not even a trace was ever found." My critic must have improved wonderfully since he left college, or

he would not know the first principle of making a chemical test for an organic compound. But has he improved? He ought to know that there is not enough sulphur in combination with the hydrogen to be precipitated as a "yellow precipitate," and the fact that there is a "decided odor of formaldehyd evidenced upon the evaporation of the solution" is due to an excess of formaldehyd having been used, rather than the supposed fact that "hydrogen sulphid is driven off by the application of heat." If Dr. Grove will make even a more simple test than the one he cites. by taking a test-tube containing a solution of hydrogen sulphid, notice the characteristics, "rotten-egg" odor, and then add a few minims of formalin, he will find the odor of hydrogen sulphid absent. What has become of the odor? If he is not yet willing to accept the results of my laboratory experiments and still maintains that coagulated albumin around the root-ends results from using Formocresol, and "that a chemical reaction between formaldehyd and hydrogen sulphid positively does not take place," let him pick up Stevens' Modern Materia Medica and Therapeutics—Fourth Edition—and turn to page 400 and read: "Though very diffusible, formaldehyd has little penetrating power; it cannot be considered, therefore, except under the most favorable conditions, more than a surface disinfectant. As it *unites readily with hydrogen sulphid* (italics mine), mercaptan, ammonia, and fetid ammonia bases to form inodorous compounds, it is a powerful deodorizer." Read this again and carefully, Dr. Grove, and then prove by your sham chemical tests that Stevens is wrong.

Oh! how tiresome; but I must go on, satisfied to realize that the essayist was considerate when he said, "I shall not bore you with a lengthy presentation of my views regarding the chemical changes involved in the breaking up of the pulp tissue." The article continues, however: "Some investigators maintain that carbon dioxid is not produced in sufficient quantity to be of any consequence, but when we recall that it is possible for this gas to be formed from the proteid tissue, as well as from the carbohydrate tissue, and that the percentage of elements composing these molecules are greater in carbon and oxygen, which elements make up carbon dioxid, we can safely assume that carbon dioxid is produced in greater quantity than any other gas formed by pulp decomposition." Dr. Grove, we cannot "safely" let *you* "assume" anything.

Carbon dioxid is an end-product of fermentation, not of putrefaction. What you should do first, before asking for the privilege of assuming things, is to prove your statements by scientific facts, sustained by clinical observation, then the profession would be lenient enough, perhaps, to grant you some leeway for your acutely active imagination. But until you do this, I, for one, insist on holding you to facts—those peculiar, and oftentimes, stubborn and inconvenient things, but these are exactly what we want.

At last we arrive at something interesting—Dr. Grove's substitute for Formocresol. The ingredients of his remedy are "chloral hydrate, thymol and calcium hydrate." "There is undoubtedly a chemical reaction involved in the compounding of the preparation" which he does "not care to enter into at this time;" yet, notwithstanding this reaction, which would modify or change the original ingredients, he considers that each has a separate and distinct action, for he says: "Chloral hydrate has a great affinity for a wide range of ammonium and sulphur compounds, the calcium hydroxid will unite very readily with carbon dioxid, and thymol was chosen for its powerful antiseptic properties." This is rather confusing. Does Dr. Grove mean that the chloral hydrate has the affinity for the "wide range" or for the "ammonium and sulphur compounds"? Perhaps he would be surprised to know that his remedy would act just as well if he omitted the calcium hydroxid. His reason for adding calcium hydroxid rests upon the supposition that it is important to neutralize the carbon dioxid which may be formed in the canal, and he suggests this basic compound for this purpose, not knowing that the fetid ammonia bases there present would do this very thing. His remedy, therefore, containing essentially, so far as therapeutic value is concerned, only chloral hydrate and thymol possesses no virtue over my Phenol Compound, (menthol, thymol and phenol), or Dr. Kirk's Thymophen (thymol and phenol) or Dr. Prinz's Thymocamphen (thymol, camphor and phenol).

In regard to the treatment at the first sitting, the article reads: "No hesitancy need be entertained about sealing this remedy in the pulp chamber of the most putrescent condition, which can be left with safety for one week or ten days, if preferred. Before placing the remedy in the pulp chamber the rubber dam should always be adjusted, gain free access to the opening of each canal, remove from the mouth of the canal the decomposed portion of the pulp, and

place a small piece of cotton saturated with the solution at each opening and seal with cement." This language is very familiar to me, but I will not mention it. Now, how about the second application? Here he forgets his remedy, for he says: "At the second sitting sodium-potassium should be used." If it is necessary to use Schreier's paste as advocated by Dr. Rhein and others, why waste the time of both patient and dentist by using Dr. Grove's remedy at all? In my work on therapeutics I detail the use of potassium and sodium, and also sodium dioxid which is used for the same purpose and in practically the same manner. In this connection I state, on page 303, "if care is exercised in the technic of using either of these preparations, the entire contents of the canal may be chemically destroyed. The methods are chemically correct and along rational and scientific lines. If care and judgment is exercised in the use of either remedy (potassium-sodium or sodium dioxid), good results will surely follow." Strange as it may seem, Dr. Grove has accepted my chemistry of the action of potassium and sodium upon a dead pulp. In my book I say, "a violent reaction takes place when potassium and sodium is transferred to a putrescent canal, the metals attack the water molecule, and hydroxids are formed, which in turn act upon the fatty end-products, forming a soluble soap which can subsequently be washed out of the canal, leaving it clean and sterile." In explaining the chemical action of Schreier's paste Dr. Grove says: "These metals decompose the water contained in the tissue to form sodium and potassium hydroxid, liberating hydrogen which ignites when the reaction is violent. This chemical reaction is due to the affinity that these elements have for oxygen. The hydroxid of the above mentioned metals unite with the fats present in the canal to form soluble soaps which should always be washed out with the distilled water."

In closing let me say that I am happy that Dr. Grove did "not wish to convey the idea that" he was "offering remedies which are magic in action," and that he admits "that the question under discussion is not settled, for there still remains a great deal to be learned regarding the subject." Surely he has demonstrated that he has much to learn regarding it. The doctor is entirely too solicitous when he says: "I trust that no one will gain the impression that I am making an effort to restrain the use of formaldehyd for a

personal gain, by placing the remedies I recommend on the market. To avoid such a belief, allow me to state that is not my purpose, for I am positively opposed to any such practice." To what "remedies" does Dr. Grove refer? He has only suggested one remedy and the only thing which is original about this one is the addition of calcium hydroxid, which as I have explained is of no value. Chloral hydrate and thymol, triturated into a syrupy liquid, has been used by a great many dentists in the treatment of teeth. (See my book on *Materia Medica*, page 141.) Potassium and sodium is already on the market after the formula of Schreier, of Vienna. If Dr. Grove suggests a remedy which possesses real merit and he will publish the formula complete, together with the pharmacy that may be involved in compounding the preparation, as both Schreier and myself have done, and if he finds after several years' trial that the profession experiences difficulty in having the remedy properly compounded; and then decides to co-operate with some ethical and reputable pharmaceutical firm to the end that the profession, if they so desire, can procure the remedy compounded true to the formula and from drugs of uniform strength, he will be treated as kindly by his profession as I have always been. The hundreds of letters which I have received during the past ten years from dentists all over the world, expressing their gratitude, is sufficient encouragement for me to work on and continue to give to my profession something in return for the many helpful things I have received from it. So far as I am concerned this controversy with Dr. Grove is now at an end.

With kindest regards, I beg to remain,

Very truly yours,

J. P. BUCKLEY.

Chicago, Ill., Oct. 4, 1913.

OBITUARY.

NOTED DENTIST DIES AT A RIPE OLD AGE.

DR. HENRY A. SMITH WAS DEAN OF COLLEGE FOR THIRTY YEARS—
PRACTICED HALF CENTURY.

Dr Henry A. Smith, 80 years of age, of 79 Hollister street, died September 10, 1913, at his home.

For more than a half century Dr. Smith has been one of the best-known men in the dental profession in this city.

He was dean of the Ohio College of Dental Surgery for more than thirty years. During this time he had become one of the leading authorities in his profession in the Middle West.

No man connected with this profession has done more to advance the research work of dental surgery than Dr. Smith. His efforts were crowned with distinction throughout the country.

Not only did Dr. Smith devote the best years of his life to imparting of his great skill and learning to others, but he was one of Cincinnati's leading practitioners most of the time during his fifty years professional life.

Dr. Smith received his degree of D. D. S. from the Ohio College in 1857 and his Master of Arts degree from Miami University at Oxford in 1894.

He is to be succeeded in his professional work by a son, in both his college work and practice.

Besides a son he leaves two daughters, Mrs. Scott and Mrs. Griese, both of New York City, and a widow.

His body was laid to rest at his old home, Oxford, O.—*Cincinnati paper*.

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S.

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

Some Uses of H_2O_2 :—To cleanse blood stained root canals and cavities, apply H_2O_2 on cotton. Equally effective in removing blood stains from coat sleeves, etc. Try it; it works like magic.—*M. J. Ruzicka, D. D. S., Prague, Neb.*

A Good Flux:—Fill a bottle with as much water as you think you want flux. Pour this water in a glass and place latter in a pan of water; fill the water in the glass with as much borax

and boracic acid, equal parts, as the molecules of water will hold; let water come to a boil and cool; pour same into original bottle and you will have a clear flux.—*Wm. V. Sher, D. D. S., Chicago, Ill.*

Don't Let Covers Stick to Sandarac Bottles:—To prevent the covers of the office preparation bottles containing shellac and sandarac from sticking, spread a thin coat of vaseline on the ground surfaces at their necks. This prevents the shellac or sandarac from adhering to these surfaces; it also prevents the covers from sticking to the bottles, and making them difficult to remove. Be sure and clean them at the points mentioned before applying the vaseline.—*F. E. R.*

Formula for Sensitive Dentin:—Zinc chlorid 20 grains; 4 drams each of alcohol and chloroform. This is not a panacea for all cases; but in large cavities, in molars and bicuspid, which approach the pulp, its use is very gratifying. In this formula the irritating property of the zinc chlorid is controlled by the chloroform, the alcohol being necessary to effect a solution.—*Elmore W. Elliot, D. D. S., Chicago, Ill.*

Always Finish a Plate Well:—The finishing of the plate is an important factor and many times hurriedly overlooked. All rims and borders should have rounded polished surfaces—the palatine extremity graduated to a nice thin margin. The mucous surfaces of the plate should be polished as nicely as the labial and lingual. Its natural undulations must be preserved with that smoothness of surface which renders it non-irritating and easily cleaned.—*Irvin B. Carolus, D. D. S., Sterling, Ill.*

Shade Guide for Synthetic Cements:—Take small capsule which you get in drug store, use longer end, take fine saw cut across end of capsule splitting it. Then cut celluloid strip to desired length and width, notch one end and insert part way in slit in capsule. Start with one shade, measure quantity desired, mix and fill cup. When filled squeeze end between thumb and finger, hold until set; lay aside for a few hours, then strip capsule off and you have shape desired. Punch number in celluloid strip and if de-

sired, can place shade in book to correspond with number. Then take two shades and work in different quantities, always measuring, then you can reproduce same shade at all times from your guide.—*Frank A. Hoyt, D. D. S., Chicago.*

Caries of Proximal Surfaces:—The beginning of caries on these surfaces is found to be just a little gingivally of the contact point and usually in the middle third of this surface. At the first it is only a narrow break confined between the contact and the free margin of the gum, spreading in bucco-lingual length in proportion to the relative size of the embrasures, and is limited by the angles of the proximal and buccal or lingual surfaces. It appears that the beginning of caries is due primarily to the physical conditions rather than chemical and is dependent upon or limited by the shape of the contact, the condition of the free margin of the gum in the interproximal space and the relative distance between the two teeth in the embrasures. “The decays in the proximal surfaces of bicuspid and molars correspond in form with the areas of ‘near approach’ of the teeth so closely and so constantly that we must connect these relations as cause and effect, controlling both localization and superficial form of the beginning and spreading of caries in the enamel.”—*E. D. Coolidge, D. D. S., Chicago.*

Surgical Analgesia:—This condition which I denominate surgical analgesia varies in different individuals; with some it is present at the very beginning of the analgesic stage, after two or three inhalations; with others it is absent till we approach or reach the beginning of the light anesthesia stage. In the stage even of light anesthesia we have complete loss of consciousness. If the patient is carried this far, we go beyond the analgesia stage and the results are not as satisfactory as when operating a little sooner. It is very desirable that these operations be performed in the stage of analgesia rather than that of light anesthesia. In the stage of light anesthesia respiration is considerably deeper and quicker than normal, and the heart's action excited, hence patients are more apt to become excited, and having passed into unconsciousness, cannot assist the operator to the extent that a patient can who responds to such demands as “Turn your head towards me,” “Elevate your

chin," etc. Either operate in the stage of surgical analgesia or push on to the stage of surgical anesthesia.—*W. H. De Ford, D. D. S., M. D., Des Moines, Ia.*

Transparent Receptacles for the Gold Drawer:—Cigarette boxes, pill boxes and salve jars have long played a part as receptacles for gold and gold solders in the dentist's gold drawer, and for a long time the lack of uniformity of such receptacles served to irritate me to the point of devising more rational means for the storage of solder, hence I suggest the following arrangement for a gold drawer: Purchase from a chemist supply house, such as E. H. Sargent & Co., Petri dishes to the number required to store the different grades or character of metals and solders you desire to keep in stock. I personally use ten of the small size Petri dishes which measure fifty milli-meters in diameter, and two of the larger ones, one hundred milli-meters in diameter. These may be labelled permanently by pasting face upward on the under side of the cover glass the grade of gold therein contained. The drawer should be divided into a series of squares (just large enough to hold each one of the Petri dishes), said divisions to be made from old cast off rubber tubing (found in every laboratory), the same being nailed to the bottom of the drawer with round headed upholstering tacks—thus forming little fences around the dishes, which retain them always in position (so they do not slide to the back of the drawer upon its opening); also makes the opening and closing of the drawers noiseless. It will furthermore be seen that your gold, plate and solders are kept constantly free from dust, and one glance at your open drawer will reveal the fact if you are short on any grade, as you look right through the cover.—*Elliott R. Carpenter, D. D. S., Chicago.*

MEMORANDA.

[Society notices will be given insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

INSTITUTE OF DENTAL PEDAGOGICS.

The next Annual Meeting of the Institute of Dental Pedagogics will be held in Buffalo, N. Y., January 27-28-29, 1914. The Executive Committee is planning to present an exceptionally interesting program which no dental teacher can afford to miss. J. F. Biddle, Secretary, Pittsburgh, Pa.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Iowa State Board of Dental Examiners for the examination of candidates will be held at Iowa City commencing at 9:00 a. m., Monday, December 1, 1913. For particulars and application blanks write the Secretary, J. A. West, 417 Utica Bldg., Des Moines, Ia.

BACK COPIES OF THE PROCEEDINGS OF THE NATIONAL DENTAL ASSOCIATION.

There are a few copies of the '07, '08, '09, '10 and '11 "Transactions of the National Dental Association" in the possession of Dr. Arthur R. Melendy. These copies, while they last, may be secured by libraries and other educational institutions and members of the N. D. A. by sending thirty cents per copy (to cover postage) to Dr. Arthur R. Melendy, Holston Bldg., Knoxville, Tenn. Otto U. King, General Secretary, Huntington, Ind.

NATIONAL DENTAL ASSOCIATION ADVANCES DATE OF 1914 MEETING ONE WEEK.

At the urgent request of the Local Committee of Arrangements at Rochester, the Trustees of the National Dental Association have advanced the date of the next meeting one week; therefore, the eighteenth annual session will be held in Rochester, N. Y., July 7-8-9-10, instead of July 14-15-16-17, as originally selected. The officers, the local committee and all other committees are going to put forth every effort to make this meeting, which is the first under the reorganization, the best in the history of the Association, and we feel confident that our increased membership and interest in our Association will prove a decided advantage in many ways. Homer C. Brown, President, Columbus, Ohio; Otto U. King, General Secretary, Huntington, Ind.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 1,046,166. Dental apparatus, J. P. Flaherty, West Bend Wis.
- 1,046,112. Gas blowpipe, H. Schweitzer, New York, N. Y.
- 1,046,113. Pressure tool for dental castings, H. Schweitzer, New York.
- 1,046,114. Preparation of molds for dental castings, H. Schweitzer, New York.
- 1,045,920. Dental form, R. J. Wenker, Milwaukee, Wis.
- 1,046,976. Inlay and bridge casting machine, A. F. Cogswell, Kirwin, Kansas.
- 1,046,560. Dental instrument, D. E. Coulson, Boulder, Colo.
- 1,047,299. Dental and surgical lamp, C. F. Rodgers, Conneaut, Ohio.
- 1,049,207. Dental cuspidor, A. C. Clark, Chicago, Ill.
- 1,049,290. Combined cuspidor and wash basin, A. C. Clark, Chicago, Ill.
- 1,048,982. Apparatus for making dental fillings, bridges and the like, D. S. Mackenzie, New Zealand, Levin.
- 1,048,740. Tooth brush, J. J. Sarrazin, New Orleans, La.
- 1,049,654. Sanitary tooth brush holder, W. O. Bloom, Worcester, Mass.
- 1,049,807. Rotary blowpipe apparatus, W. C. Bucknam, Jersey City, N. J.
- 1,050,469. Dental appliance, F. O. Keifer, Elk City, Okla.
- 1,050,282. Rotary tooth brush, H. T. Lipscomb, Baltimore, Md.
- 1,050,672. Dental wall bracket, J. H. Macintosh, Sydney, Nova Scotia, Canada.
- 1,050,560. Dentifrice and floss dispenser, G. Moore, Joplin, Mo.
- 1,050,561. Pad for artificial teeth, J. Moore, Indianapolis, Ind.
- 1,050,933. Attachment for dental articulators, W. W. Evans, Hamilton, Virginia.
- 1,050,864. Tooth brush holder, W. L. Smith, Pittsburgh, Pa.
- 1,051,547. Blowpipe apparatus, W. C. Bucknam, Jersey City, N. J.

- 1,051,843. Breath deflector, J. A. McClure, Bemidji, Minn.
 1,051,433. Tooth brush holder and sterilizer, G. G. Moseley, Redlands, California.
 1,054,488. Dental instrument, M. Bailey, Birmingham, Ala.
 1,053,965. Saliva ejector, L. R. Barghausen, Washington, D. C.
 1,053,968. Blowpipe, L. L. Bower, Philadelphia, Pa.
 1,054,017. Tooth brush, C. E. Miller, Worcester, Mass.
 1,054,028. Bracket support for dental engines, O. H. Pieper, Rochester, New York.
 1,054,033. Head rest, F. Ritter, Rochester, N. Y.
 1,052,806. Dental instrument, W. W. Evans, Hamilton, Va.
 1,052,832. Artificial tooth, J. Kohn, Philadelphia, Pa.
 1,052,850. Device for shaping gold crowns to teeth, J. C. Schwartz, St. Louis, Mo.
 1,052,539. Combined tooth brush and holder, W. P. Welch, Adrian, Mich.
 1,052,043. Dentifrice applicator, L. C. Davis, Cedar Falls, Iowa.
 1,052,374. Combined dental and surgical tool, H. A. Parr, New York, New York.
 1,053,720. Toothache remedy, D. Feigensohn, New York, N. Y.
 1,053,523. Dental floss holder, W. R. McMillan, Flatbush, N. Y.
 1,054,999. Dental impression tray, M. O. Thein, New York, N. Y.
 1,055,607. Tooth brush, D. L. Chandler, Ayer, Mass.
 1,055,718. Dental articulator, J. B. Davis, Lansdowne, Pa.
 1,055,894. Dental articulator, W. W. Evans, Hamilton, Va.
 1,055,347. Manufacturing dental models, P. Robin, Paris, France.
 1,056,341. Handpiece for dental engines, A. R. Keltie, Boston, Mass.
 1,056,427. Placing anchors in artificial teeth, J. Kohn, Philadelphia, Pa.
 1,057,192. Dental crown and bridge structure, G. L. Wernet, Philadelphia, Pa.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

NATIONAL DENTAL ASSOCIATION.

It has been thought advisable to arrange so that those who wish to attend the International Dental Congress in London next summer may go on the same steamer if they wish. The plan is to arrange to sail on a steamer leaving New York immediately after the closing of the National Dental Meeting, which will be held in Rochester, N. Y., early in July. Those who wish to join the party sailing at that time will please notify me at 560 Fifth Ave., New York City, at an early date as possible, in order that the steamship company may know how many to provide for. Herbert L. Wheeler, Transportation Committee of the National Dental Association.

OHIO STATE DENTAL SOCIETY.

The forty-eighth annual meeting of the Ohio State Dental Society will be held in Memorial Hall, Toledo, December 2, 3 and 4, 1913. The program of papers and clinics contains the names of men of world-wide reputation. Each feature will be a liberal dental education in itself. A "Health and Science" conference on Wednesday evening will be a feature of great importance and interest. The Governor of the State is expected to address the conference with others of high standing in matters of public health. All ethical dentists are invited to attend. Make your hotel reservation early; mark the dates off and come. F. R. Chapman, Secretary.

NEW JERSEY STATE BOARD OF EXAMINERS.

The New Jersey State Board of Dental Examiners will hold their regular annual meeting and examination in the Assembly Chamber of the State House at Trenton, N. J., December 1, 2 and 3, 1913. After January 1, 1914, all applicants for a license to practice dentistry in New Jersey "shall present to said board a certificate from the Superintendent of Public Instruction showing that before entering a dental college he or she has obtained an academic education consisting of a four years' course of study in an approved high school (public or private), or the equivalent thereof." A bridge, consisting of three or more teeth, exclusive of abutments, and one Richmond crown will be accepted as a practical test in prosthetic dentistry, in place of a full set of teeth soldered upon a gold or coin silver plate hitherto required. Applications must be filed at least ten days prior to date set for examination. For further particulars apply to Alphonso Irwin, D. D. S., Secretary, 425 Cooper St., Camden, N. J.

THE ETERNAL OUTGO.

I thought we'd buy a car this year,
 We had our plans all made;
 But as it happens now, I fear,
 The game will be delayed.
 I'd scraped together the amount,
 But yesterday I found
 I'd have to rob my bank account
 To get three molars crowned.

We shall not go to Panama
 As we had hoped to do,
 Nor see the festive Mardi Gras;
 Our plans are all askew.
 No more for us the merry life,
 Our touring days are done;
 It happens that my gentle wife
 Must have some bridge work done.

W. Kee Maxwell in the *Peoria Transcript*.

DENTAL COLLEGE COMMENCEMENTS.

COLLEGE OF DENTAL AND ORAL SURGERY OF NEW YORK.

Graduates—B. J. Adles, J. J. Alper, C. G. Anderson, I. Appleman, D. Baumet, A. Belivan, Z. Blum, L. Brach, S. M. Cantor, S. Chalupski, S. Colominsky, S. Corne, F. C. Davis, W. L. Dyer, G. Eriksen, Cecilia J. Feinstein, Rose E. Finkenthal, H. E. Fountaine, H. A. Gartner, S. N. Glasserow, D. D. S.; B. A. Greiper, F. W. Herchenroder, J. Herskowitz, May Jokel, R. S. Knorr, A. E. Kraft, L. Kushner, H. Mainwold, H. H. Mansville, S. Messinger, C. Myer, P. Nash, Sophie Nevin, J. Reiner, Sophie R. Rosenbaum, Bessie Schenkel, F. H. Schramm, J. Schwartz, Etta M. Seelig, Anna D. Shapiro, M. Silver, B. Spanier, P. R. Sueskind, Fannie S. Turk, B. Vendrovsky, N. W. Vidor, I. Wachtel, A. M. Weiss, I. I. Weitzman, J. J. Zapp.

THE DENTAL REVIEW.

Vol. XXVII.

CHICAGO, DECEMBER, 1913.

No. 12

PRESIDENT'S ADDRESS.*

BY RAYMOND J. WENKER, D. D. S., MILWAUKEE.

Fellow Members of the Wisconsin State Dental Society, Ladies and Gentlemen:

It gives me pleasure to preface this address with an appreciative acknowledgment of the great honor you have conferred upon me in electing me to preside over your deliberations. I cherish this expression of your confidence and esteem very highly and I take this opportunity to again thank you with all the gratitude and sincerity at my command.

I said at that time I would exert my best efforts to wield the gavel as effectively as it had been by my worthy predecessor, and I appeal to you now as I did then in the words of our beloved Lincoln: "Let us have faith that right makes might, and in that faith let us to the end dare to do our duty as we understand it."

I bid you all a very hearty welcome to this the 43d annual meeting of this society, and I extend a special and a hearty welcome to the members of the medical profession. It is my fond hope that your deliberations at this meeting may prove highly profitable and that you may return, feeling more than repaid for the sacrifices you may have made in attending it.

PROGRAM.

Your officers and committees make a considerable effort each year to arrange a program of superior merit, always selecting live

*Read before the Wisconsin State Dental Society.

subjects, such as are attracting the attention of the thinking minds of the profession, with the hope of ever increasing your interest and offering you greater opportunity for profit. It is an arduous task to successfully arrange and stage so large a meeting as this. It requires much time, work, patience, and the exercise of good judgment on the part of every officer and committee.

I believe they have made an extraordinary effort this year with the result that they have arranged a program of unusual significance and merit. The large number of exceptionally valuable clinics, papers and discussions which will be given, many of them by specialists, both by local talent and by men of national reputation, from various parts of the United States, I am sure will make this one of the most profitable meetings the society has ever had.

I therefore take this opportunity in behalf of the members of this society, to thank each one of the officers and committee men for the sacrifices he has made, and the effective work he has done in arranging this meeting.

MEMBERSHIP.

Our present membership is 600, which is very much larger than it has ever been in the history of our existence. This is a very creditable showing as compared with many states. I may add that we feel a just pride in the large number of well educated and broad-minded men and women constituting our membership. Nevertheless, without finding any fault with our members or officers, I will express my dissatisfaction with the attendance at our state meetings and with the organization of our county societies. It is with those who do not support and attend our meetings that I find fault.

The counties which have been organized and are components of the state organization up to the present time are: Milwaukee County Dental Society, Manitowoc County Dental Society, Winnebago County Dental Society, Eau Claire, Dunn County Dental Society, La Crosse District Dental Society, St. Croix, Pierce County Dental Society, Sauk County Dental Society, Kenosha County Dental Society, Columbia County Dental Society, Racine County Dental Society, Dane County Dental Society, and the Central Wisconsin Dental Society, which latter comprises the counties of Marathon, Wood, Portage, Clark, Taylor and Lincoln. This represents less than one-half of the counties of the state.

Every county in the state ought to be organized either separately or jointly with a neighboring county, and every dental organization in the state should be a component of the state society. Wherever there are other dental societies in a county in addition to the regular county organization they should become district and component societies of the county, and thus become affiliated with the state organization.

A man may be very skillful but he will not enjoy real success until this becomes generally known among his fellows. This avenue of publicity is necessary to enable him to reap the full benefit of his skill. I believe that this is true regardless of the other avenues of publicity through which his skill may become known.

No one can develop without the assistance of his fellow practitioners and without such assistance he cannot climb the ladder of fame and fortune to any appreciable height.

Any one who is not interested in the prestige of his profession and does not regularly attend its meetings is not worthy of, nor entitled to the support of the people of his community or the recognition of his fellows.

It is my earnest desire that this message shall reach every dentist in the state, and that unless he has an exceedingly good excuse to be absent, I hope that he will awaken to a fuller appreciation of his duty in this matter and use his best efforts to organize his county and report at our next regular meeting.

AFFILIATION WITH THE NATIONAL ASSOCIATION.

The secretary of the re-organization committee of the National Dental Association has made the following recommendations for your consideration:

"First—That each State Society take the necessary official action to become a Constituent Society of the National, which will entitle them to representation in the House of Delegates.

"Second.—We strongly urge that all societies affiliate with their entire membership, and amend their constitution and by-laws accordingly. This will give the State Societies only one class of members, and greatly facilitate the necessary official relations incident to such an affiliation.

"Third.—Constituent Societies should elect their quota of representatives, and an equal number of alternates to meet with similar

representatives from other states at Kansas City, to form the first House of Delegates. We recommend that the first named representative be selected with the understanding and authority that he is to officially represent his society in the event that the first House of Delegates should be composed of one member from each Constituent Society.

"Reports from the 24 societies that have met would seemingly justify us in expecting from 8,000 to 9,000 members from these for 1914 meeting, as they have a total membership of about 10,000, and while all have not officially reported, my best information is that all except two have voted to come in with their full membership for the 1914 meeting, and we are of the opinion that these two will be able to pay dues for their entire membership for the 1914 meeting. The 24 societies that are yet to meet have a total of more than 6,500 members and if most of these take similar action to those that have already met, we are justified in assuming that the re-organized National will have not less than 10,000 and possibly 12,000 or even more, for 1914. This will give some idea of the re-organized National from a membership point of view, and we feel sure that we will soon have a large and strictly representative National Association with greatly increased opportunities and influences for all that means progress in dentistry and health questions generally."

Doctor Ottolengui presented the proposed plan of the National re-organization to this society, at some length, last year, and a large number of our members signed forms which the Doctor furnished, in which we personally pledged ourselves to support this movement. I would suggest that you take steps, in the early part of this meeting, to take this matter under consideration. It will probably be advisable to do this through a committee, as resolutions to amend our constitution will be necessary in order that we may join the National in legal form.

PROTECTION AGAINST UNJUST MAL-PRACTICE SUITS.

The American Medical Association and some State Dental Societies have made provision to protect their members against unjust mal-practice suits.

Among the many features which our State Society offers to eligible dentists as inducements to affiliate themselves with our

body, this would appeal very strongly to many. The following is an extract from the amendment to the By-Laws adopted by the Massachusetts State Dental Society last year, which I recommend for your consideration:

"Active members of the society, in good standing, shall be entitled, in accordance with conditions specified in the following sections of this article, to receive, without personal expense therefor, advice, and court service of an attorney in the employ of the society, for the purpose of conducting their defense in any court in this commonwealth, when they are unjustly accused of malpractice.

"Active members of this society desiring to avail themselves of the privileges provided in this article shall make application therefor, in writing, to the society's law committee, and shall show to its satisfaction that they are members in good standing in the society, with all obligations to the society fully discharged. They shall also furnish the law committee, at its request, a complete and accurate statement of their connection with the treatment of persons upon which complaints against them are based, giving dates of treatment, names and addresses of persons cognizant of facts and circumstances necessary to a clear and definite understanding of all matters in question, and shall furnish such other relevant information, if possible, as may be required of them by the law committee or the attorney of the society."

THE RECOGNITION OF THE D. D. S. DECREE.

In the year of 1902 the American Medical Association passed the following resolution bearing on this subject:

"Dentists who hold the degree of D. D. S. from a reputable state dental society, may be admitted as dental members on recommendation of the Section on Stomatology, and approval by a majority vote of the Section, the names of such members to be sent to the secretary by the secretary of the Section. * * * Dental members shall enjoy the same privileges as regular members and be subject to the same conditions."

The attitude of the medical profession toward the specialty of dentistry has been growing more favorable for the past twenty-five years. When the Section of Stomatology was first organized only those holding the Medical degree could become members. I have

a firm conviction that we need this encouragement. As we progress in our specialty we feel an ever increasing need of a closer relationship and co-operation with the mother profession. In order to foster this relationship and draw the two professions of this state into a closer feeling of fraternity and co-operation I recommend that more of our members take advantage of this privilege. I also recommend that a medical section of this society be organized, admitting ethical and qualified medical graduates to our membership on the same conditions and with the same privileges as dental graduates.

RESEARCH WORK.

In this connection I wish to call your especial attention to the paper by Dr. Robert Ivy of Philadelphia, entitled "The Mouth in the Etiology and Symptomatology of General Systemic Disturbances." This subject has of recent years engaged the attention and serious consideration of the greatest scientists in both the medical and dental professions. It is a field of study which has been but little cultivated as yet and offers for the ambitious and progressive scientist perhaps one of the greatest and most profitable research fields in science.

The active causative agents which invade the human body and produce disease, enter it by way of various portals of entry, and among these there is not one of greater importance than that of the mouth; and since this is in the field of our labors it behooves us all to acquaint ourselves with the results of the latest experiments and the most advanced thought on the subject.

There is nothing in the whole category of dentistry, if taken singly and worked out to its ultimate end, which would do more to elevate the prestige of our profession and result in greater benefaction to humanity than this subject of mouth infections.

Dr. Charles Mayo, in his masterly paper on this subject, read before the Chicago Dental Society last January, attracted a very large representation of progressive medical and dental practitioners from all parts of the United States. In closing the Doctor made the significant remark that "it is evident that the next great step in medical progress in the line of preventive medicine should be made by the dentists. The question is, will they do it?"

The National Dental Association has recently organized a new

department to be known as the Scientific Foundation Fund. It is the purpose of this organization not only to do research work on a large scale, but also to stimulate the formation of local research clubs, and to encourage men to engage in this class of work by offering prizes for the best work done along this line.

In former years we spoke of the need of research work, at a later period we spoke of the demand of it, and today we speak of the imperative necessity of it.

I believe every member of this society must realize, more or less, that this necessity exists, and I do not feel that I can urge you too strongly to support this movement, and to become active participants in the proposed club work.

ART IN DENTISTRY.

In bringing this subject to your attention I do not do so for the purpose of discussion, but rather to establish a point in history, and to record a step of progress in the development of dentistry. I will ask you to kindly overlook the references to myself in this connection, as it cannot be avoided.

In the year of 1903 I began to teach art in its relation to dentistry in the dental department of the Milwaukee Medical College. In 1905 and again in 1911 I read papers before this society discussing the subject of art in its relation to Orthodontia. In January of this year I read a paper, in discussion, before the Institute of Dental Pedagogics, on "The Teaching of Art in Dentistry." In this paper I advocated the establishment of a Technic Commission, whose function among other things, should be to formulate and standardize a course in Dental Art in the schools of the United States. A motion to appoint such a commission was passed by the Pedagogic Association, and you may therefore look forward to a formidable course in art in the dental curriculum in the near future.

I believe that this is one of the most important milestones in the progress and development of dentistry in recent years. I look forward with much pleasure and hope of seeing more of humanity beautified by dental art in the future.

TAGGART-BOYNTON SUIT.

In regard to this suit I will say that after it had been started in Washington, Doctor Schottler, who had been doing inlay work

and had given a clinic before the state meeting held in Manitowoc, came to the rescue of the dental profession of the United States, under the auspices of the Milwaukee County Dental Society, by presenting evidence of his work along this line. The testimony which he presented in this suit was the main strength of the defense, and as you all know, Dr. Taggart lost in his final appeal to the highest court of appeals in Washington. An extract of the decision in this case is as follows:

"The real question which we are called upon to determine from the evidence before us is whether the various dentists who have testified, or any of them, were in possession, on the date of the original application for this patent, of the idea attempted to be covered thereby, and whether they, or any of them, gave expression of that idea in a practical and public way. It is of no possible consequence that by the use of Dr. Taggart's machine, gold inlays and the like may be produced more cheaply and rapidly than they were produced by dentists who have testified. It is enough if those dentists took a wax impression in the manner described by these claims, and formed a mold around the pattern thus obtained, for the purpose of casting a dental inlay or the like. To hold that this was not done would be arbitrarily to disregard and set at naught the testimony of witnesses whose character and reputation are unimpeached, and whose testimony is reasonable and in entire harmony with the circumstances in the case. We are unwilling to assume such a position. We are fully persuaded that the evidence shows beyond a reasonable doubt that for many years prior to the filing of the original application herein, the process of making patterns and molds for dental inlays and the like, as expressed in these claims, had been publicly practiced upon many occasions. This finding avoids the patent and renders it unnecessary to determine whether the claims thereof were anticipated by the prior record.

"It follows that the decree must be reversed with costs, and the case remanded with directions to dismiss the bill."

The end of the battle, however, has not been reached, as was supposed, and another suit was instituted in Chicago, which affects Wisconsin and other neighboring states.

This suit, I have been informed, was very poorly defended, and as a result has been won by Dr. Taggart. I would suggest

therefore, that you give this matter careful consideration at the earliest possible moment.

ASEPSIS.

Dr. John S. Marshall has recently criticised the profession for its lack of a sense of asepsis, and I am inclined to believe that, in some respects, his criticism is justifiable. I called the attention of the profession to this criticism in a paper before the Milwaukee County Dental Society, last fall.

I have visited many dental offices where this criticism would not apply, and I have visited others where the need of it was so pronounced that it was difficult for me to understand why educated people would patronize such men. I am pleased, however, to make this comment, that many of these disease spreaders have either changed their methods, ceased to practice dentistry, or are doing a poor business.

It should be borne in mind, in this connection, that there are a great many valuable patients constantly on a secret search for good, clean methods of practice. I have been convinced of this fact by noting how carefully educated patients secretly watch our actions. In case you are called to the telephone, or to shake hands with a friend, or perhaps to receive a telegram they will secretly observe whether you wash your hands, or dip them into an anti-septic solution before returning to the mouth to resume your work. In case you drop an instrument, or a crown on the floor, or in case you stop to wipe perspiration from your face, or reach into your pocket for change, or stop to turn on the electric fan, and a thousand other things which will contaminate your hands, they are conscious of your subsequent actions from the standpoint of asepsis.

When you recall the fact that laboratory experiments have proven pyorrhea alveolaris to be a contagious disease, that the state board of health has estimated that there are 12,500 cases of tuberculosis in this state, that an authority has estimated that 40 per cent of the American people have either inherited or acquired syphilis, and that the mouth is subject to many other diseases, and is a carrier of many pyogenic micro-organisms to which we are exposed, certainly this must bring a vivid picture to your mind of the constant danger of your daily practice, not only to your other patients, but to your family and to your own person as well.

ORAL HYGIENE.

For the past twenty-two years I have observed a condition in the mouths of many patients to which I wish to call your attention. It is a condition which either means neglect by patients, or lack of skill and careless workmanship by practitioners, or a combination of these causes. I am confident that this class of work is diminishing from year to year, but the fact that it is still too common and is unquestionably one of the most important predisposing factors in the causation of so-called pyorrhea alveolaris, is, I believe, sufficient excuse to call your attention to it. I will attempt to present a more or less general composite picture of this class of work as I see it.

Patients present themselves with an unhygienic condition of the mouth. The gums may be receded in places, the proximal surfaces are badly stained, in many cases the lingual surfaces are also more or less stained, while the labial and buccal surfaces may be fairly clean, due to cross-wise brushing by the patient. There is considerable calculus on the proximal and lingual surfaces of the teeth, and there is occasionally an open sinus draining pus from a root. The arch line of the teeth has been broken by extraction and the mouth as an organ of mastication is crippled, due to malocclusion. This, in a large number of cases, may be traced to neglect, and early or delayed extraction of the deciduous teeth, or to neglect and extraction of the permanent teeth. And not the least of the patient's lamentable state is the multiplication of the unhygienic condition which has been produced by artificial food catchers and germ traps, in the form of poorly constructed and illy-fitted crowns, bridges, inlays and fillings. Upon inquiry it is learned that many of these patients have visited dentists irregularly, and at distant periods, or have been in the hands of one, two or more practitioners for years, and by the way, these practitioners are almost invariably of the non-progressive type. Most of these patients have never been instructed in the proper method of brushing their teeth, and in some cases they have even asked their dentists to clean them, and he has either neglected to do so, or did it indifferently. Not a few of these patients are in fair or good financial circumstances.

The fact that these conditions exist is a detriment to the pres-

tige of dentistry, and a handicap to the progressive and conscientious element of the profession.

The educational movement which was started by the National Mouth Hygiene Association is probably the solution to this problem. This, in the very nature of its evolutionary process, is a slow working remedy.

The following appeal from this association is worthy of your careful consideration:

"AN APPEAL TO DENTAL SOCIETIES FOR CO-OPERATION AND SUPPORT IN THE EDUCATIONAL WORK OF THE NATIONAL MOUTH HYGIENE ASSOCIATION.

Dental Societies and the National Mouth Hygiene Association are mutually interested in having the ethical part of the dental profession prepared to furnish the highest and most efficient type of dental service to the public on the one hand, and on the other to educate the public not only to know and understand the value of such service but to seek the same in the common interest of humanity.

The dental societies throughout the world have been markedly successful in preparing the ethical part of the dental profession to furnish the highest type of dental service; but their efforts to educate the people to appreciate the value of such service has been as markedly unsuccessful.

Dental organizations educate the profession to render the best service. The National Mouth Hygiene Association, through its auxiliaries, educates the people to appreciate the value of and to seek this service.

The Association has no intention of interfering with or handicapping any of the activities of local, state or national dental societies or associations; but was created for the purpose of enabling these organizations to do those things which can not be as well done by professional organizations.

The National Mouth Hygiene Association is an auxiliary of the National Dental Association, operating indirectly under the Oral Hygiene Committee of that Association. Its membership embraces practically every prominent Oral Hygiene worker in the country, and most of the best men in the dental profession. In addition to this a number of the most prominent National, State and Local Officials who are interested in the general hygiene of the body, as well as a number of prominent educational officials are members.

The Association proposes through research and publicity to teach the public to know and understand the relation that Mouth Hygiene bears to the questions of general hygiene of the body; and that the first mission of the dental profession is to teach prevention of dental caries. The second mission is to correct faulty or diseased conditions in a manner which will restore the working efficiency of the mouth, enabling it to perform its service in the economics of the body under most hygienic and favorable conditions.

The foregoing paragraph reads nice and sounds nice; but let us offer a word of explanation. The National Mouth Hygiene Association's chief mission, if true to its purpose, is to protect the public from unhygienic conditions. Originating as it did in the mind of a dentist, its first thought and purpose should be to see that the dental service offered to the innocent and unsuspecting public be of a nature which would meet with the ideals of such an organization.

This being the case, one of the first purposes of this organization should be and is the destruction of the sources of income for the unethical dental "vampires" that infest the profession, rob the public, and have done more to discredit dentists and dentistry than all other things put together. The

Association expects to accomplish this in four ways—Research, Education, Legislation and Prosecution.

The Association is waging a 90-day campaign for the purpose of securing 5,000 charter members from the dental profession; and this is being done because the officers and members of the Board of Governors desire to have this organization go before the public as having a charter membership of such magnitude that it will command and hold the attention and respect of every individual or organization with which it comes in contact.

The Charter Membership fee is \$5.00, and the annual dues thereafter, \$1.00.

Immediately following the 90-day period for securing Charter membership a number of the most prominent and successful workers and organizers in philanthropic and uplift organizations will be placed in the field on salary for the purpose of securing membership and funds which will enable the Association to carry out its policies along the lines mentioned herein. In fact, negotiations have been entered into and some of the best talent the country affords has been engaged for this work. This force will include newspaper and magazine publicity men, and a number of the most efficient organizers of philanthropic and charitable societies or associations whose duty it will be to organize the public and raise funds for the purpose of establishing and maintaining suitable dentariums or dental hospitals to care for the worthy poor in all the cities and towns of the country.

In raising funds for the support of dental hospitals or dentariums it is the policy of the Association to secure sufficient funds to endow these institutions for all time, employing the same methods and means as are used in securing funds for the building of hospitals, establishing sanitariums, and other charitable or philanthropic institutions.

There will be a staff of legislative experts and a corps of men and women who will devote their time to bringing about conditions which will make it impossible for the "parasites" in the dental profession to continue to ply their trade at the expense of the health and comfort of innocent and unsuspecting people. To protect the public from this kind of dentistry is one of the most important missions of the Association, and should bring to it the support of every ethical member of the dental profession.

The Association has placed an order for something over a million leaflets and booklets to be distributed throughout the country and expects to use three or four times that number within the year.

The extent of the work accomplished and the number of experts employed will depend very largely upon the immediate support given this movement by the members of the dental profession.

In conclusion, we would like to say that if the members of the dental profession of this country desire to accomplish the greatest amount of good to the greatest number in the shortest time they should unite at once with that organization which has already accomplished so much during its short existence and assist it in bringing about the results it has undertaken to produce in behalf of both the profession and mankind.

To this end and for this purpose the National Mouth Hygiene Association is asking your society or association to appoint a committee to assist in bringing about results in your community.

Thanking you in advance for any courtesy or co-operation afforded, we beg to remain,

Respectfully yours,
NATIONAL MOUTH HYGIENE ASSOCIATION.
Per W. G. EBERSOLE,
Secretary-Treasurer."

A very creditable movement was started in this state last year to educate the public in oral hygiene, by purchasing and exhibiting

a moving picture film. This film has been placed in the hands of a committee who has rented it to dentists in a large number of communities, and I believe has resulted in much good.

This film is, however, only one step in a large educational movement which should be judiciously followed up by other films, by literature, and by a series of lectures. The fondest hope of my life would be realized if every dentist in the world were as thoroughly imbued and surcharged with the value of oral hygiene as is Ebersole. Would that we could all cultivate an Ebersole picture of the value of oral hygiene.

Much assistance might be given this movement if such a course were instituted in every dental school in the land as would instil a vivid picture of this subject in the minds of our dental students. This would be getting at the very root of the movement. For the new blood of the profession thus educated would more nearly approach the Ebersole picture than it is possible for the old blood to acquire.

Illinois has done much valuable work in educating the public through its educational commission, under the leadership of Dr. Logan, during the past winter. I would suggest that we enlarge the scope of our public press committee and conduct an educational campaign on a large scale similar to the one conducted by our Illinois brothers.

You no doubt have all read of the gift of two million dollars by Forsyth of Boston, and more recently that of \$10,000 annually by Rosenwald of Chicago. These wealthy men have given these generous donations to aid the poor through the medium of dental infirmaries.

I dare say that many of you have acquaintances of a similar character who would, if the matter were properly presented become dental benefactors of equal magnitude.

Until such time as our government realizes that the health of her people is her greatest asset, and is enabled to take charge of all matters pertaining to their health similar to the plan adopted by the Australian government, we must look to private citizens who have enjoyed the protection of the government and had the opportunity of acquiring wealth under this protection, to come to our assistance. We need the help of moneyed men and women to relieve the dental sufferings and privations of the poor and

helpless. This matter should not be lost sight of in conducting our educational campaign.

OPPORTUNITY.

We often hear the statement that opportunity knocks at our door but once in a life time. Again we hear that opportunities are not so numerous nor so great now as in the days of our forefathers, and many similar disparaging remarks. Now as a matter of fact, nothing could be farther from the truth. It is true that, as the population and the general education of the public increases, problems of life become more and more complex, but this should not make it more difficult to see nor to grasp opportunities since the sagacity and resourcefulness of our present American is much greater than that of our forefathers. Opportunities increase in number as life problems increase in complexity, and they are constantly waiting at our door begging for recognition. It simply remains for us to study their nature that we may recognize them in their manifold and complex forms. It has always been and always will be difficult for some to see opportunities, while others succeed in cultivating this faculty to a remarkable degree. It is this opportunity-seeing and the ability to grasp them, that helps men to get to the front. All great men of the past possessed these qualities.

In periods of discouragement we are prone to study the other fellow's occupation, and frequently we come to the conclusion that he has a much more profitable and desirable one than we have. And we will do this in the face of the fact that each one of us is surrounded with a multitude of conditions, rich in possibilities. It is not necessary to go to California or South America to seek fame and fortune. We are in the midst of conditions crying for a remedy.

The value of the oral hygiene movement was open to any of us for years, but we did not recognize it. We could not understand opportunity's call. She was trying to make us understand that a gold mine was beneath our very doorstep, but we pushed her aside and continued in our daily routine in the vain hope that fame and fortune might reach us by some mysterious means. It took a Jessen and an Ebersole to recognize this opportunity and to find a remedy.

The medical profession was losing its once highly esteemed prestige in this country, and it took a Carnegie to recognize it and institute a remedy.

The demand for research work has been a crying necessity in medicine and dentistry for many years and although many have recognized it, we have waited all these years for a satisfactory solution.

The mouths of many thousand tubercular patients and many thousand indigent citizens and children in this state need your attention and help. The problems of how to conveniently, economically and effectively sterilize tooth brushes and mouths are awaiting solution. The importance of a solution of these problems has been recently demonstrated from a new point of view. It has long been recognized that by the acts of sneezing and coughing we contaminate the atmosphere with germ life. During the past winter, Dr. Levings, of Milwaukee, made a series of experiments in which he demonstrated that we pollute the atmosphere in the ordinary act of speaking. He placed nurses and internes in a sterilized room and succeeded in getting abundant cultures of pyogenic organisms from the atmosphere vitiated by the act of speaking at a distance of two feet. These experiments were repeated with the additional provision of covering the mouth with eight thicknesses of sterilized gauze, and still he succeeded in getting cultures in some cases.

Many lives and thereby millions of dollars in economic value are annually lost in the United States through preventable disease.

Perhaps the most stupendous problem awaiting solution is that of complete annihilation of, or universal immunity to, pyogenic micro-organisms.

Besides these and many other problems which will readily suggest themselves to the thinking mind, we may look at the very methods and materials used in our daily practice for opportunities. We need simpler, quicker, and more effective methods of doing many kinds of work in our field. Or to take it from the opposite point, our present methods are too slow, too difficult, too tedious and too imperfect.

The present tedious scaling and polishing, which we find necessary in the treatment of pyorrhea and other mouth conditions, is not the final solution in mouth hygiene.

The present cumbersome and unhygienic crown and bridge is not the final solution in this line.

The present vulcanite or metallic plate is not the final solution of artificial dentures, nor is our metallic, or porcelain filling or inlay the final solution in filling teeth.

Perhaps the solution of some of these problems may seem to many of you more like visions or dreams, rather than possibilities. But this has always been the cry in spite of the fact that nature has yielded one secret after another by the simple magic touch of a Pasteur, a Metchnikoff, a Wright, or an Ehrlich.

SUMMARY.

First—Research work is an immediate and an absolute necessity.

Second—The profession needs the support, advice and co-operation of every progressive practitioner to aid her in an organized effort to solve her innumerable and stupendous problems.

Third—The most effective work is possible only by uniting and thoroughly organizing all our forces. To do this all subordinate dental organizations must affiliate themselves to a county society and through it to the state and national organizations. This is necessary not only for scientific and educational work, but for protection as well.

Fourth—We realize an ever-increasing need of a closer relationship and co-operation with medical men, and with that end in view, I favor a more intimate association and a more free exchange of thought at scientific deliberations of both professions.

Fifth—If we would rise from the artisan and craftsman to the perfection and dignity of professional men, dental artists, we must study and apply the principles of art in dentistry.

Sixth—Any one practicing the healing art in any branch of science, who does not follow the most rigid methods of surgical cleanliness, is a menace to society and should not enjoy the right to practice.

Seventh—We should persevere in, and judiciously increase our educational activities in all directions and among all classes of society.

Eighth—I urge you to support the National Mouth Hygiene Association to enable it to carry out the plan outlined in the appeal quoted in this address.

Ninth—The development of the faculty of opportunity-seeing is a very important part of our education. Opportunity-blindness, pessimism and poverty are cousins.

Tenth—The progress in dentistry in the next five years will more than triple that of any previous five years.

Eleventh—Dentistry stands at the threshold, the main gateway, to preventive medicine.

Twelfth—Of all the occupations and professions I do not know of one which is richer in opportunities and future possibilities than dentistry.

Fellow members and friends, I have not said all I would like to say, nor all that may be said on subjects which may properly come within the scope of an address of this character. However, I believe that in what I have said, you will find ample food for thought and discussion.

UNIVERSAL DENTAL ELEVATOR WITH LOCKING DEVICE FOR BALL AND SOCKET JOINT.*

BY DR. ANGELO CHIAVARO, ROME, ITALY.

In no other professional branch of medicine are so many instruments required as in dentistry. Elevators, forceps, scalers, pluggers for gold,—amalgam,—cement, burnishers, all must be so constructed that their working points or edges may present every conceivable angle and curve with respect to the handle, so that they may be adapted to every surface of the tooth or root, and so that they may be introduced and used in all points of cavities of decay, whatever their position.

Thus one finds a great and continual development of instruments of a certain kind into numberless single instruments, the points of which, always identical in form, follow in each one a different line and are connected to the handles at a different angle.

In 1897, while studying dentistry in the Philadelphia Dental College, it struck me that if one could obtain an instrument handle in which interchangeable points of divers patterns could be solidly fixed at will at any angle and position, the dentist's outfit would be materially reduced and simplified, whilst it would be possible to save considerable time when working on cases which require the use of several instruments.

It was this idea which led me after many attempts, to devise

*Read before the American Dental Society of Europe.

an instrument with a ball and socket joint; the ball being "pitted" or rather "honeycombed" and easily locked at any angle or position.

No. 649,234

Patented May 8, 1900.

A. CHIAVARO.
DENTAL TOOL HOLDER.

Application filed Aug. 28, 1897.

(No Model.)

Fig. 1.



Fig. 2.

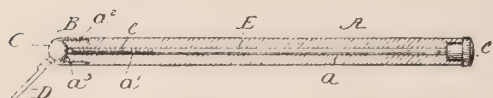


Fig. 3.

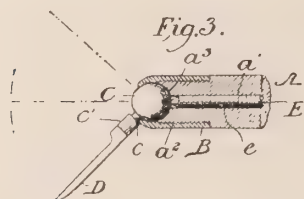


Fig. 4.

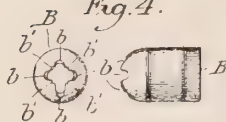


Fig. 5.



Witnesses

Walter C. P. ...
Jesse B. ...

Inventor

Angelo Chiavaro,
per J. H. ...
Attorney.

Plate 1.

As this system of locking the point is a new and original mechanical device, I obtained a patent for it in the United States.

Besides the use it may have as an elevator for extracting roots,

this instrument has many other applications outside dentistry. The same device may be used on surgical instruments and even on tools for general mechanical purposes by altering the size and shape of the handle and the form and number of working points.

Illustrations in Plate 1 reproduce in reduced proportions the figures attached to Patent No. 649,234, dated May 8th, 1900, of the Washington office for the United States: A schematic view is given as I originally devised it.

The instrument sectionally consists of four parts: 1, a handle (A) perforated its whole length, with a screw-worm inside and outside the end which is to hold the working point; 2, a working point (D) the shape and size of which may vary according to the work it is intended for, made of one fixed piece (fig. 2) or screwed (fig. 5) to a spherical base (C) on the surface of which numerous pits are dug, nearer or further apart, shallower or deeper, according to the size of the ball and the intended use of the instrument; 3, a socket piece (B) into which the ball is set, which sustains the working point; the socket is screwed onto the tapped end of the handle. In this socket piece on the free end through which the working point of the instrument passes, several longitudinal recesses of various depths are made (b—b').

A shaft (E) the length of the handle, having one end shaped as a screw-head and the other end tapped, ending in a slightly rounded point.

By passing this shaft through the handle from the butt and screwing it in, its point will be driven into one of the pits of the ball-head, fixing it rigidly to the socket, the crown of which has a smaller opening than the ball-head itself.

When the shaft is not fully screwed in, the ball-head can move in any desired direction within the socket and may be fixed with the working-point either on a line with the handle or at any angle to it; because the neck of the working-point can be clutched by one of the recesses in the free end of the socket.

Fig. 1 shows, schematically, the complete instrument with all its parts assembled.

Fig. 2 represents a longitudinal section of the instrument.

Fig. 3 demonstrates the working parts at the end of the instrument, schematically.

Fig. 4 shows the socket piece seen front and side.

In the front section one sees the recesses in the free end of the socket ($b-b'$)—of several depths, allowing of divers inclinations in the angle of the instrument.

Fig. 5 shows us the ball-head countersunk only in one point (C), the ball (C) serves as a base for the working point and may be in one piece with the point or have the point screwed into it.

The instrument as thus constructed with a proper handle and with special points worked very well in extractions as an elevator, the use I had meant it for; but in order to use the elevator on the direction opposite to the worm of the screw I was obliged to drive a retracting screw through socket and handle so as to prevent its unscrewing when working with the point at right angles.

However, this slight modification had the disadvantage of entailing considerable loss of time in fixing the point at any desired angle when the instrument had to be taken apart for sterilizing purposes or changing points.

I then thought out several devices in which I was assisted by the advice of my able friend, Prof. Quirino Majorana and by Sig. Marco Carpani, director of the well known surgical instrument factory of Invernizzi, Rome, who produced the instrument.

My attention was first devoted to the working end of the instrument, and thus, without any alteration in the handle and the shaft, I modified the socket making it in two distinct parts, the lower was made as a sleeve and the upper part remained as a socket (Fig. 6).

The sleeve engaged the upper socket, making a tight joint; and on the two opposite sides two longitudinal slits were made allowing the play of a tempered steel spring which pressed down on the handle, fitting closely.

On the inner lower side the sleeve was made round and on the upper inner side it was made square; a square section was also given to the end of the handle and the sleeve with its inner upper square end fitted this part of the handle; whilst its lower inner side corresponded to the lower round end of the handle. On the upper part of the sleeve, above one of the springs, a rectangular continuation of this sleeve was carried. Once this lower sleeve was fitted on, it could not turn, as it was locked by the square portion of the handle. When the upper socket piece had been screwed on the end of the handle (a socket piece similar to the model of the first in-

strument but having two rectangular slits above the two prolongations of the lower sleeve), by pushing the lower sleeve to the upper socket piece of the lower sleeve it would engage the corresponding slits of the upper socket, locking this firmly.

To move or change the position of a point, it is sufficient to disengage the lower sleeve from the upper socket, unscrew slightly the socket piece after having unscrewed the shaft from the butt end on the instrument.



Figure 6.

Figure 7.

Fig. 7 gives a view of the completed instrument as thus described and in working condition, with the lower sleeve engaged in the upper socket piece. In Fig. 6 one can see the component parts and three working points of divers shapes, all for use as elevators.

So as not to take up your time with descriptions of further modifications, I shall only describe the latest universal dental elevator which I have adopted, as it represents the most simple yet the most solid construction, allowing of perfect sterilization of all parts

and the use of any size of handle or working point, so that the instrument may have the widest application.

According to this latest model the instrument is composed of three single parts: (Fig. 8) a handle; a shaft, and a working point.

The handle is made of German silver, ending in a tempered socket piece; one hard-soldered to the other and nickel plated, so as to appear to be made in one piece. It is hollow all through. At about one-third of the distance from the head it is screw-threaded, the socket piece being rounded inside to receive the ball head of the working point. In the opening of the socket there are four recesses of different depths, to receive the neck of the working point at different angles.

The working point, built according to preceding models, is of one piece with the ball head, which is covered with pits countersunk in it.

Fig. 8. The point is dropped in from the butt end of the handle where the opening is larger than the one in the terminal end.

The passage through the handle is tubular, narrowing at the socket piece enough to catch the ball head whilst allowing the working point to slip through.

The shaft, a strong one, is screw-threaded at about one-third from the point, which is slightly dulled.

It is screwed into the corresponding thread inside the handle and can thus lock the ball head in any position, its point engaging in one of the many pits countersunk on the ball head itself.

Fig. 8 shows, apart, the handle, the shaft and the working point of the "Universal Dental Elevator" of which a photogravure is given in Fig. 9. This new model combines the advantages of a very simple construction to the efficiency of a very solid instrument. The shaft being threaded at about one-third of its length, near the socket allows of great solidity with the utmost rigidity even with instruments of a small size. Perfect sterilization is insured by the ease with which the instrument can be taken apart and its three component parts boiled.

I have been using this instrument for some time as an elevator with most satisfactory results; results confirmed also by the experience of such colleagues as Captain Amedo Perna, surgeon in charge and director of the Dental Clinic of the Military Hospital

on Monte Celio, Rome; and Dr. Vincenzo Duca, dental surgeon in the Municipal Dental Clinic, my honorary assistant in the dental department in the "Policlinico Umberto 1," Rome.

We have found this instrument invaluable in extractions of roots and of lower wisdom teeth when difficult of access or in abnormal conditions.

Besides its use as an elevator the instrument can fulfil many purposes, because all kinds of interchangeable working points can be devised so long as they are made in one piece with the ball head and countersunk.

For one handle I can have elevator points of divers lengths and sizes; I can have a lancet, useful in surgical cases, for cutting or curetting cavities or points difficult of access; I can have a screw-driver to tighten or loosen a screw or nut in positions where a straight screwdriver would be of no use; because with my instrument the point, as we have said, can be set instantly at any angle whatsoever to the handle.

For a small sized instrument one can have points for curetting, excavating, compressing, burnishing, etc.

Should one wish to have a larger working point which could not be slipped through the handle, one can have a ball head constructed with a neck, into which points larger than the ball head itself can be screwed firmly, without dismounting the instrument: (mouth-mirrors, tongue-depressors, mouth-openers, etc.).

Having found this instrument so useful in my own practice, I consider it my duty to call the attention of my colleagues to its advantages, recommending them to test it.

TREATMENT OF MANDIBULAR FRACTURES.*

BY PROF. DR. MED. ARRIGO PIPERNO, ROME, ITALY.

With these short notes I shall try to give you a systematic classification of the numerous methods of treating mandibular fractures and will emphasize special treatments which gave me very good results in the Hospital of the Policlinic Umberto 1. in Rome.

Extra Mouth Apparatus—Are the various bandages of the

*Read before the American Dental Society of Europe.

chin, beginning from the bandage of Hippocrates to the simple and double sling of the chin, to the Barton's (1) and Hamilton's (2) bandage, to the elastic band of Bouisson (3). The last one, which has been recently revived by Ponroy (4), can be used to fully counteract the antagonistic muscular forces.



The Angle-Sauer apparatus in a case of mandibular fracture between the left cuspid and bicuspid.

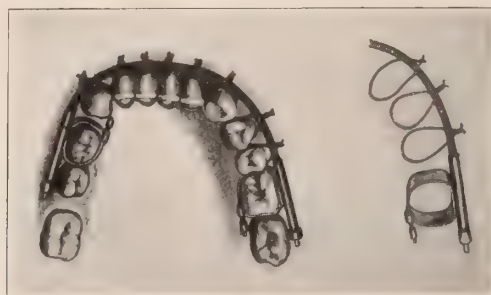


Figure 1.

Simple Ligature of the Teeth.—Hippocrates (5) used the ligature of the teeth with gold wire or linen thread. Can be applied to the lower maxilla only, on the teeth which limit the fracture, or contemporaneously to the teeth of the upper maxilla, as did Wilhelm Salicet, Leblanc, Thomas Gilmer (6) followed by A. D. Black (7), Power (8), Oliver (9), Graham (10).

The simple ligature of the teeth is not always practical and

does not always procure perfect immobility of the fragments. Can be successfully applied together with other prothetic means, as I will relate after.

Intermaxillary Wooden Wedges.—Introduced, after Boyer, by Claude and Franc Martin (11). They must be placed between the posterior fragment of the fracture and the upper dental arch. Because the mouth of the patient remains opened and the saliva flows out of the lips, it is preferable to use small wedges and to help them to remain better in their place combining their use with a bandage of the chin.

Surgical Treatment.—A. Suturing of the bone. Used in America for the first time in the year 1827 by Kean Rodgers. The first operators introduced the wire directly through the gum and the periosteum. So did H. Thomas (12) with his special spiral method of twisting the wire. Carter (13) twisting the wire with his special key, could exercise a continuous, progressive and regular action on the fragments. In order to avoid the overmounting of the fragments, T. W. Shankland crossed a double silver wire like an X.

Modern surgeons prefer generally the suture of the bones. Although this method can be highly recommended where no teeth remain in the lower maxilla, it cannot always give satisfactory results as far as the perfect physiological occlusion of the dental arches is concerned.

B. *The Lane Plate.*—It is a derivation of the "Dieffenbach" method of fastening broken bones with pegs. Robert (15) and Schede (16) had applied before a bronze-aluminum plate fixed on the mandibular fragments by means of a silver wire suture. The Lane plate is of silver, generally one-sixteenth of an inch thick and perforated by holes of seven-sixteenths of an inch, through which are inserted screws on the bone fragments. I have heard of very good success with this method by Dr. T. W. Brophy and W. H. G. Logan of Chicago, Ill.

Prosthetic Treatment.—The great variety of the mandibular fractures has given the dentists the possibility of producing an enormous variety of prosthetic apparatus. We shall try to coordinate and to systematize them.

A—Apparatus inside the mouth:

1. Fixing the lower against the upper (removable).

2. Leaving the lower maxilla its movements (fixed).

B—Apparatus contemporaneously in the mouth and out of the mouth:

1. Applied without the necessity of making a model.

2. Who request the making of a model.

A—Prosthetic appliances inside of the mouth which immobilize the lower maxilla against the upper.

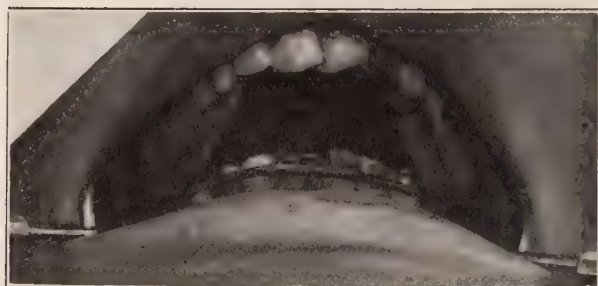
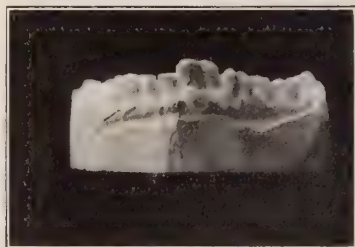
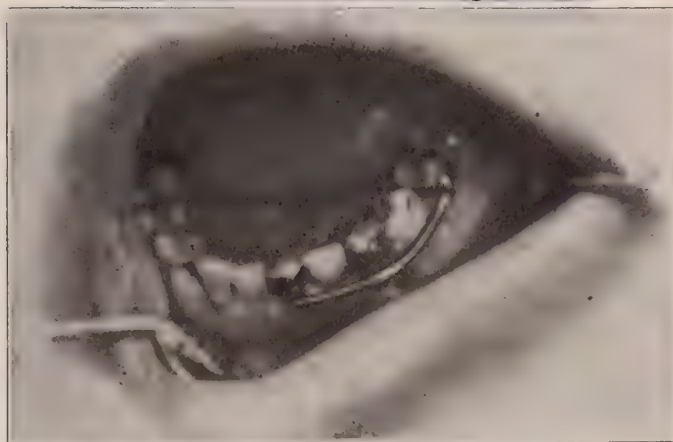
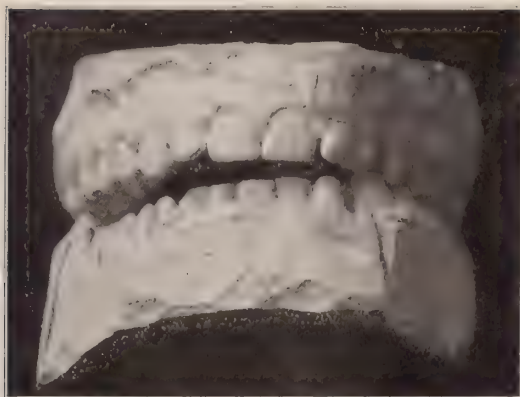


Figure 2.

Dr. C. S. Case's appliance in a fracture of the lower maxilla at the symphysis.

Morel-Lavallie (17) was the first to try to fix with gutta percha the dental arches together in case of fracture. Gunning (18) used first the interdental vulcanized splint. This method was used at the same time by Bean (19) of Baltimore during the American war in the year 1861. Weisse (20) of New York advises to adopt a tin foil on the plaster model in order to have a larger vulcanized denture, more easily fitted to the teeth. Ottolengui (21) and Nagle (22) prefer the tin appliance to this of rubber. I used very successfully an interdental splint from tin in a fracture of the symphy-



Dr. C. S. Case's appliance in a double mandibular fracture.

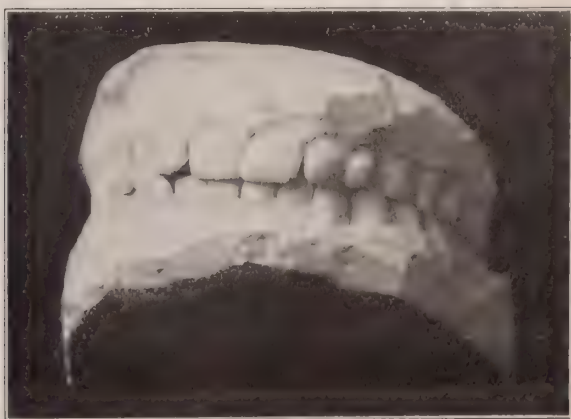


Figure 3.

sis of a boy five years old. The callosity formed very rapidly and I was able to take out the appliance after ten days. Platschick (23) combines the middle part of the splint of tin with the occlusal parts



Comminuted fracture of the maxillary bones.

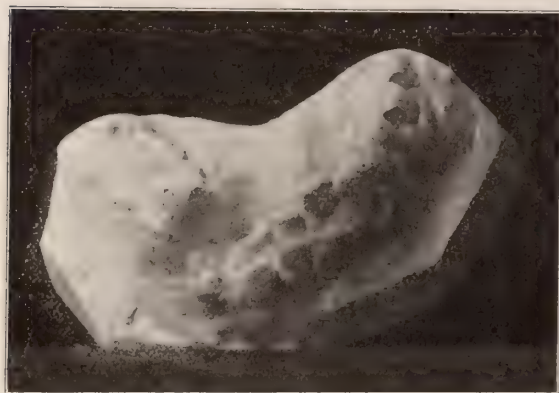


Figure 4.

of rubber. Monod (24) treated two difficult cases with silver interdental splints. The recent casting methods have facilitated the making of the metal interdental splints. E. C. Moore (25) and T. H. Beeson (26) used cast aluminum splints.

The Gunning's method is very practical in cases of maxillae without teeth, in cases of fractures of the ascending ramus of the



Author's method for treating mandibular fracture of W. L.



Figure 5.

neck of the condyle and of the coronoid process, in which is necessary the immobility of articulation.

Another method for fixing both dental arches we find in Angle's



Figure 6.

Author's method for treating the mandibular fracture of W. L.

system of Orthodontia (27). He wires together two or four opposite bands cemented on opposite teeth. It gives an exact anatomical reduction and a perfect immobilisation, but increases the torture to the patient for the difficulty of eating and speaking.

Prosthetic appliances inside of the mouth which leave the articulating movements to the lower maxilla.

1. Removable appliances.

The Hammond's (28) appliance is the type of this class. It consists of a strong metal wire (gold) united at the extremities.

contouring the lingual and buccal faces of the teeth (from the plaster model.) It is fixed by ligating some teeth with flexible wire to

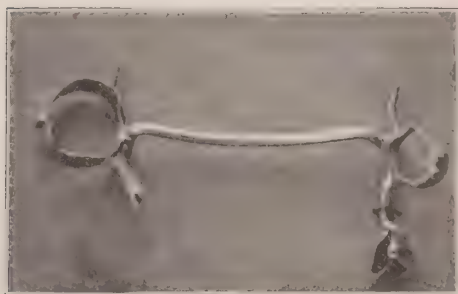
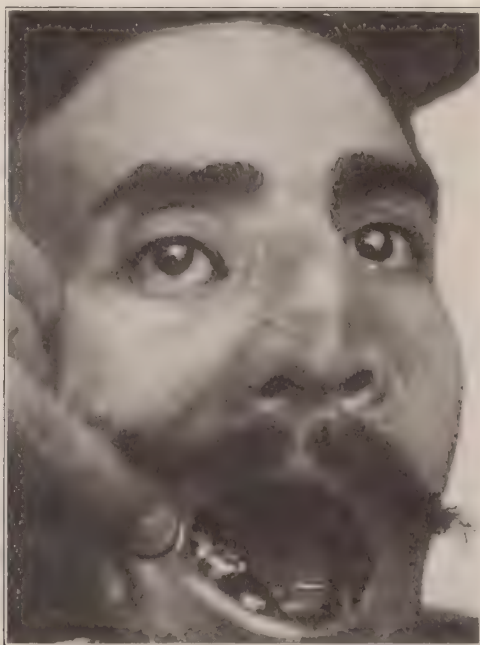


Figure 7.

Author's method for treating the mandibular fracture of W. L.

both internal and external metal wire. Sauer (29) joined to this apparatus an inclined plane. Angle's bands with tube and screws can perfectly maintain the fragments of a fractured maxilla.

Sauer (30) in the year 1889 adapted directly in the mouth, avoiding the model, a strong metal wire on the external faces of the teeth



Figure 8.

Esthetic and functional result in the case (W. L.) of comminuted fracture of the maxillary bones after treatment.

and fixed it to the teeth by intermediate flexible wires. Stoppany (31) of Zurich, followed by his pupil Egger (32), combined successfully the wiring of the teeth, as in the Sauer's method, to the common expansion arch of Angle. I had beautiful results with the Angle-Sauer combination in a countryman of fifty years of age having a simple fracture of the lower maxilla between the left cuspid and the first left bicuspid. This method, not requiring any making of model, was by me applied very soon after the traumatism, contributing to diminish the pain and the danger of infection. It was removed after 30 days giving perfect consolidation and beautiful physiological results.

Shotwell (33) uses a special steel or German silver rubber-dam clamp in all forms of fractures situated in front of the angle.

Anton Witzel (34) fixed with two clamps on both sides of the mouth an aluminum splint on the dental arch of a fractured lower maxilla.

2. Fixed appliances.

Tanes of London (1860) constructed first the simple metal splint and Sands (35) of New York composed it from vulcanized



Figure 9.

The normal occlusion of the teeth. From a skeleton of the author's collection.

rubber. These splints are cemented on the teeth. Suersen (36) used largely the vulcanized splint in 52 cases during the Franco-Prussian war. Mahe (37) perforated the splint and fixed it passing a wire from its holes to the teeth. Neppel (38) employed the tin splint, Power (39) the pressed aluminum. The open splint, opened at the occlusal surfaces of the teeth, was first used by Weber (40) followed by Cuffaro (41), Dupre (42), who used a simple aluminum open splint, Robin (43) who used the silver one. Haun (44) fixed the splints with guttapercha, Lemerle of Paris recognizes the superiority of the cement, Allen (45) mixed cotton with cement.

In view of the difficulty of cleaning these fixed appliances and because of their default of hiding the fractured joint, Hoebaers (46) advises a splint for each fragment, uniting them with lateral plates which leave opened the point of fracture.

At modern times there is a tendency to more simplified appliances. Dufosse (47) retains the bridge-work the best means for treating fractures of the body of the lower maxilla. The same is Delguet's (48) idea.

I have found an ideal intrabuccal fixed apparatus using Dr. Case's (49) appliances for orthodontic work. The double wire is soldered to the bands on the corrected model. I used it on a case of a double fracture at the level of the second right molar and of the first left bicuspid in a boy 14 years old and in a case of a simple fracture at the symphysis in a young man 18 years old. The bands were cemented with Ames' cement. The advantages of this method count in the esthetic, being the apparatus entirely in the mouth; in its simplicity yet capable of maintaining a perfect reduction of the fracture; in its hygienic construction which eliminates consecutive infections. It does not generate pain nor troubles to the patient who can eat and speak at once after the application of the apparatus.

Of course the method has its inconveniences. Solid teeth are necessary in the fractured maxilla. When the teeth have a very closed contact point it is rather difficult to prepare and to fix the bands. It requires also the work of a skillful dentist.

B. Apparatus contemporaneously in the mouth and out of the mouth.

With them the lower maxilla maintains its movements. They consist in an intrabuccal splint in conjunction with a bandage or a sling of the chin. Are especially indicated in cases of mandibular fractures when the teeth are missed and the alveolar process is not too flat. They are not indicated in the fractures of the angle or when a fragment is too much injured by the traumatism.

1. *Apparatus in and out of the mouth which does not require the making of a model.*

The idea of these double pressure apparati belongs to Chopart and Desault in France (1780), then to Ruthenick in Germany (1799) and to Bush in London (1822). Houzelot (50) made the type which has remained classical in the history of our argument.

The buccal splint is united to the chin metal supporter in the median line, where a screw approximates them in a parallel way. Nux (51) found very practicable the use of a common impression tray, full of Godiva or Stents, in conjunction with a strong, round wire, contouring the maxillary portion of the face like an Y. Following his example I used the same impression tray full of impression compound in conjunction with the outside part of the automatic saliva keeper of Eggler of Coppingen, Wittbg, soldering to the chin supporter a large adapted metal screen which allowed the natural contact of the air with the skin of the chin. The patient, a young man 25 years old suffered in consequence of a bad ossification of the fragments of a comminuted fracture of both jaws. Injured by a gun he had lost the right part of the upper maxilla. The median part of the lower maxilla was severely injured and the right and left mandibular fragments were so approximated as to impede the mastication on the left side of the mouth. After the cutting of the new ossified bone, being impossible to adapt a gold swedged splint which I had previously prepared, I placed the impression tray, as described, on the lower fragments in their right position, allowed the impression compound to be hardened by cold water, then I fixed easily the tray to the chin supporter. Having verified the right position of the fragments after four days, at the 12th day the apparatus was entirely removed and substituted by a special bridge for two weeks, then by a vulcanized denture, with an unexpected functional and esthetic result.

The great advantage of this apparatus consists in the *equal and constant pressure* of the external elastic wire. Other appliances give a fixed pressure with a result of an effective retention only in the first moments of their application. We must take the precaution to cut the surplus of the impression compound and to watch that the impression tray, with its border will not injure the gum. Any how the apparatus is of a very rapid and easy application.

2. *Apparatus in and out of the mouth which require the making of a model.*

The common Kingsley (52) interdental splint was really invented by his assistant Dr. K. C. Gibson (53) in the Bellevue Hospital in New York. The splint of vulcanite is made upon a correct plaster model and has attachments for outside supports curved around the corners of the mouth. It is retained in position by pass-

ing a narrow bandage over the arm of the splint and under the chin, back and forth, until it is firmly fixed. Between the years 1872 and 1878 the Gibson-Kingsley appliance was modified, securing the upper arm of an ordinary duct-compressor, used as a splint, by the ratchet device for causing compression.

I noted the apparatus of C. Martin (54) consisting of a dental splint which continues in the anterior and median line with a steel spring contouring the lower lip and the chin. Joining a metal sling of the chin, this author treated with success 42 cases of mandibular fractures. The steel spring gives a continuous pressure allowing a perfect retention. Martinier (55) simplified the complicated Martin appliance, substituting for the central spring two rigid lateral screws.

I shall only quote some authors who modified the preceding methods: Delair (56), followed by Couturier (57) and Snoeck (58) Fynaut (59), I. Monod (60), Lohmann and Tul. Witzel (61) Holbaers (46), Moriarity (62).

This rapid review of the treatment of fractures of the lower maxilla has not allowed me to dwell any longer on the description of the various appliances. I give an extensive bibliography of the argument to help my colleagues who want to consider greater details. I thank you.

Note.—For more details consult Dr. A. Piperno's book on "*Fractures of the maxillary bones and their treatment.*" "*Fracture delle ossa mascellari e loro cura.*" Unione Tipografica" Editrice Torinese—Torino. 1913.

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SYSTEM IN MARKING INSTRUMENTS.

BY E. M. S. FERNANDEZ, D. D. S., CHICAGO, ILL.

This is a simple and definite method of marking dental instruments for their proper arranging and placing, "A place for each one and each one in its place."

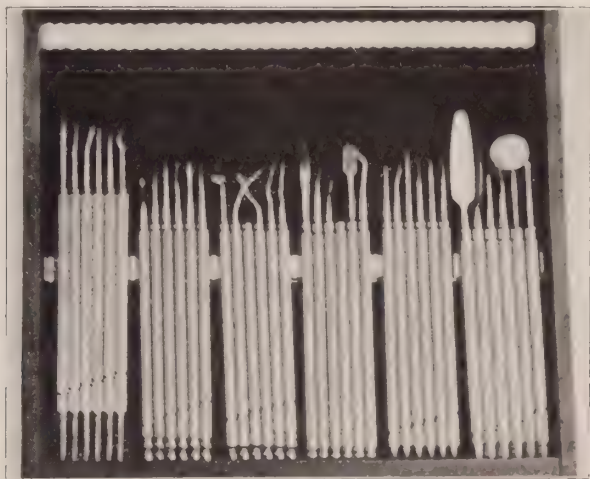


Figure 1.

By turning at the extremity of the back end of an instrument any special shape such as a ball, or a cone, or an inverted cone, or a pear shape, etc., the instruments will be marked for their own drawer, that is those terminating in a ball shape will belong in one drawer, while those terminating in a cone will belong in another drawer and so on, each end mark deciding the drawer in which the instrument belongs. (See Fig. I.)

To mark the instruments so as to denote their place in the drawer, a narrow groove is turned around the back end of the instrument, cutting on the first instrument close to its drawer mark, and cutting each instrument a trifle higher so that when all the instruments in one drawer are laid down in their place these cuts or

marks will form a diagonal line thereby confining each instrument to its place in the drawer. (See Fig. II.)

Also by wider grooves cut around the handles where they do

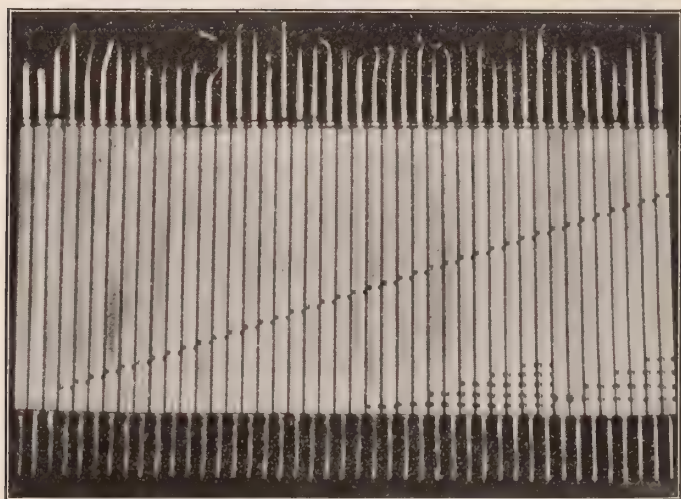


Figure 2.

not interfere with the diagonal mark, the instruments can be marked in pairs, each pair having either one, two or more grooves. (See Fig. II.)

NITROUS OXID-OXYGEN; SOME PRINCIPLES INVOLVED WHEN USED SCIENTIFICALLY TO INDUCE ANESTHESIA.

BY V. B. NEWELL, D. D. S., STAFFORD, KANSAS.

Within recent years there has been so much said and written regarding Nitrous Oxid-Oxygen as an agent for inducing analgesia and anesthesia, that one might easily conclude that but little more of value could be said of this very great boon to suffering humanity. Perhaps we are in a position somewhat similar to the old southerner, who was a witness in a court of justice. After the old man had told his story and had answered the innumerable

questions propounded him by the attorneys on both sides of the case, he was asked if he had told the court the truth, the whole truth, and nothing but the truth of what he knew about the case. Whereupon, after careful deliberation, he replied "Yes, and perhaps a little to the rise."

An epidemic of Nitrous Oxid-Oxygen has passed over the dental universe, creating havoc in some quarters and spreading a great deal of comfort and satisfaction in others.

Few men are blessed with the powers of doing all things well. Most of us can do a few things well, but all of us can improve upon our present ability. The gold inlay has revolutionized the dentistry of ten years ago. The dental profession is accomplishing things now of which we never dreamed as being within the bounds of possibility before Taggart gave us the casting process; and yet it has been a curse to some men. We have been compelled to use it. The public has demanded it, but, to this day, some men have never been able to put in a creditable gold inlay. The same can be said of Nitrous Oxid-Oxygen. Its merits have been proven. It is being used successfully and endorsed by men, whose judgment we cannot doubt. It is being exploited and demonstrated by men who are able to prove its value to the world. The medical profession is recognizing its value as an anesthetic, and will very soon utilize it as an analgesic; and the dentist, who does not provide himself with the facilities for its use, will be left behind very soon. Some will use it more successfully than others, but all will have to use it or step aside for the fellow who does.

Its analgesic properties will prove to be most useful in the field of dentistry, but as analgesia is a state of partial anesthesia, I shall confine this paper to the underlying principles involved in the induction of anesthesia, from which a technique may be formulated on a scientific basis.

To become a safe and skillful anesthetist, one must have a knowledge of normal and pathological conditions, so as to recognize any conditions which indicate or contraindicate certain methods of procedure. One must have a working knowledge of diagnosis, physiology, and anatomy, especially of the mechanism of respiration and processes of oxygenation of the blood. One should have a knowledge of the composition of air, and the physiological

effect, if any, of each of its ingredients when inhaled. One should be thoroughly acquainted with the properties and action of the anesthetic used. In addition to all this, one must be acquainted with practically all of the means of resuscitation. In consideration of these few elements of knowledge I have enumerated, I believe you will agree with me that anesthesia is a subject not to be dealt with lightly. True, any one may, with a suitable inhaling apparatus, administer most any of the anesthetics in use, and, by forcing it long enough, will produce an anesthesia (or kill the patient). True, men by doing it a great many times, have become quite skillful, in a way. Perhaps most every one who may read this knows of a dentist who, from an impression and mush bite, can construct a denture that seems to satisfy his patients fairly well, but this sort of method in the dental profession is now being forced to the background, and every operation in our profession must have a scientific basis, and be followed out in the most scientific manner. For lack of space, I cannot go into all of the different phases of this subject, but will confine my paper to a study of air, respiration, and oxygenation, in relation to anesthesia.

The air is, in volume, about one-fifth oxygen and four-fifths other gases, or to be more exact, twenty-one per cent oxygen and seventy-nine per cent other gases, which have little or no physiological effect when taken into the lungs, other than to furnish volume.

Respiration is the process by which the elements of the body gain the oxygen they require, and get rid of the carbon dioxide they produce. In man, the respiratory apparatus consists of the trachea, widened at the upper part into the larynx, which contains the special mechanism of the voice and communicates through the nose or mouth with the external air. Below, the trachea divides into two bronchi, and they dendritically into innumerable branches or wider passages—the infundibula—the walls of which are filled with recesses called alveoli. These have no muscle fiber, but consist, essentially, of a network of elastic fiber covered on the side next the lumen by a single layer of large epithelial scales, and here a few polyhedral cells. The trachea and bronchi are strengthened by incomplete rings of cartilage, but in the bronchioles these are absent. The trachea and bronchi are connected behind by non-striped muscular fibers, which also exist between the rings. As stated, the cartilage does not exist in the bronchioles, but the muscle fibers still persist.

The lungs are incased in an air-tight box—the thorax. The pleura, which covers their internal surface, is reflected over the chest walls and diaphragm in such a manner as to form the lateral sacs—the pleural cavities. In health, these two walls, lubricated with lymph, glide on each other with the movements of respiration, but in disease, these sacks may be nearly filled by exudation, as in pleurisy, or by blood, as in rupture, wound, or aneurism. Between the two sacs, lay the mediastinum. The pleural and pericardial sacs and mediastinum form the thoracic cavity.

Now, as the elastic tension of the lungs is not very great, the external atmospheric pressure would make breathing impossible. It is, therefore, necessary for nature to provide for either one or two methods of inflating them—either to force the air in or draw it in. To accomplish this, nature has provided the chest walls, built up of ribs united by intercostal muscles. These lift the ribs, expand and enlarge the thoracic cavity, and thus draw in air through the tracheae, down through the bronchi and into the air cells, thus inflating the lungs and accomplishing the act of inspiration. Space will not permit me to enter further into the minutia of the mechanism of respiration, but the above will suffice to keep clearly in mind the fundamental principle involved. Expiration in perfectly tranquil breathing is brought about with very little aid from active muscular contraction. The diaphragm and elevator muscles of the ribs relax, the structures relax into their original position, and the air is expelled.

The rigidity of the trachea and bronchi, the semi-rigidity of the infundibulae and alveoli prevent the air from all being expelled, and so there is always a certain amount of residual air in the lungs. This contains oxygen with which to constantly supply the blood through the thin walls of the alveoli. The inert gases of the air furnish volume to inflate the alveoli, so oxygen may circulate and come freely in contact with the membranous walls of the cells.

In normal respiration, the lungs become fully inflated at each inspiration. Should the action of the thoracic muscles be interfered with by tight clothing, corset, etc., respiration will be impaired, by the lungs not being fully inflated, and the full area of the lining of the air cells will not be spread out, as it were, for the reception of the oxygen. The blood soon uses up the oxygen and the individual suffers from inoxygenia. If there is an obstruction

in the bronchi or trachea, either by constriction of the walls, or by any foreign body being lodged within them, there will be increased effort to receive the full volume of air. If there is no restriction of the action of the muscles, as by tight clothing, and the nerve supply with all its communications are working normally; and if there is no obstruction between the air cells and outside air supply, respiration is carried on in an even easy manner. But if, for reason of any of these factors being impaired, so that at every inspiration the lungs are not fully expanded and the air cells fully inflated, we will have forced breathing, and in direct proportion to the lack of air supply will nature increase her efforts to obtain it.

Safety in anesthesia largely depends upon maintaining the amount of oxygen required by the system. (In using the term "per cent," I mean that the full capacity of the lungs represents one hundred per cent.) If we administer fifty per cent anesthetic and depend on air for the other fifty per cent of volume, the amount of oxygen is reduced to ten per cent, about the minimum of oxygen that will maintain life without functional disturbance. But fifty per cent of Nitrous Oxid will not induce or maintain a good anesthesia. To increase the dose of the anesthetic very much, will reduce the amount of oxygen too low to maintain life. To overcome this difficulty, we used to force the gas to the exclusion of most of the air until asphyxia completed the anesthesia, but this method was fraught with too many dangers and difficulties to be practical except in very short operations. Scientific investigators have now made it possible for us to overcome this difficulty by administering the necessary amount of oxygen along with the anesthetic, and by excluding the air, a sufficient volume of the Nitrous Oxid may be administered to maintain prolonged anesthesia. But we must remember that a volume of gases sufficient to fully inflate the lungs at each inspiration must be supplied. The relative proportions of the two gases will, in most all cases, be sufficient. Occasionally, however, we find a case where a little air may be admitted. These cases are where a small amount of Nitrous Oxid is required, and too much oxygen would be necessary to supply the deficiency in volume.

We have said that normal respiration requires that all air passages leading to the lungs be free from occlusion or constriction. To maintain this normal respiration when administering

Nitrous Oxid not only requires this, but that all tubes and valves of the administering apparatus be large enough to admit all the gas the lungs can accommodate at each inspiration without any unusual effort on the part of the patient.

To administer Nitrous Oxid-Oxygen for a dental operation, having seated the patient in the dental chair in about the same position as for filling an upper incisor, ascertain that the patient is in proper condition and fully prepared; with stethoscope examine for heart lesion, and see that clothing is loose; stomach empty; false teeth, gum or other foreign substance removed from the mouth; then place the mouth prop in position where it will least interfere with the operation. In most cases, I use the large face mask inhaler, and after anesthesia is well advanced, quickly change to the nose piece, but in either case admit nothing but air for one or two inspirations, until patient is accustomed to the condition. Now, remember the lung cells are already full of air containing oxygen, also that the haemoglobin of the blood at this moment is fully supplied with all the oxygen it needs. Oxygen is a stimulant of the motor centers. To administer oxygen now, in most cases, has a tendency to stimulate the motor centers and an exhilarating effect is produced, which will delay the effect of the anesthetic. The writer uses the Clark New Model Apparatus. Make sure that the tube connections are tight and valves working accurately, and the bags moderately filled, then turn the indicator on the dial to one point of Nitrous Oxid, after one or two inhalations, turn to the second and then the third point, leaving the air vent open, until the full volume of Nitrous Oxid is being admitted. By this time, in most cases, the patient will be near the third anesthetic stage and will show evidence of slight cyanosis. Now close the air vent and turn the indicator to the first point of oxygen and then to the second, and after a couple of inhalations, if there is too much blueness of the lips, turn to the third point of Oxygen. In the writer's opinion, a very slight blueness of the lips is preferable, as a fuller respiration may be had than where too much oxygen is given. Where there is a slight deficiency of oxygen, nature makes an extra effort to obtain it and thus a deeper respiration is had.

Having by this time determined the proportion of gases necessary to obtain the desired state of anesthesia, hold it. Many ac-

cidents occur from administering so irregularly that the patient, at times, nearly comes out of the anesthesia, and again is plunged into profound narcosis. Hewitt says: "Anesthesia is good as it is uniform. Unskilled dentists and amateurs are great offenders to this principle and many deaths attributed to "heart disease" and 'unrecognized status lymphaticus' are really due to intermittent anesthesia." If this technique is followed out carefully, in most cases, a profound anesthesia may be prolonged sufficiently for any ordinary operation.

Idiosyncrasies make it necessary to vary with the case at hand. One person may require as much as twenty per cent of oxygen, while another may not require over seven or eight. One person may require oxygen from the very start, another, oxygen may cause excitement and must be withheld until the surplus oxygen is used out of the lungs and blood, before any is administered. One person may require a great amount of the anesthetic, while another requires very little. In all cases, best results may be had by starting slowly and increase the pressure as indicated.

Successful surgery is determined by the amount of benefit to the patient in consequence of the operation. The operation that was a success, though the patient did die, is no longer considered a success, even if the patient lived several days and finally died of pneumonia or septicaemia. Ether and chloroform leave the system in a state of enemia, and thus in a condition not to resist infection. Nitrous Oxid-Oxygen leaves the blood saturated with oxygen and thus in a state to resist infection, and wounds heal rapidly.

The most common dangers to be avoided are from occlusion of upper air passages, or from adventitious substances within them, and from conditions preventing lung expansion. The condition of heart and lungs should be ascertained, and stomach should be empty. As further precaution against unforeseen emergency, a hypodermic, charged with a fortieth grain of strychnine, should be in a convenient place; a mouthprop should be placed between the teeth, and a tongue forceps in easy reach.

AN ACCURATE METHOD OF TURNING RIM ON A
SWAGED PLATE.

BY O. G. KRAUSE, D. D. S., MILWAUKEE, WIS.

As we still find it necessary to swage our plates, the cast plates not proving as successful as we had hoped for, the method



Figure 1.

that I suggest in turning a rim is simple and accurate as if done by machine with no danger of warping during operation.

The customary manner of turning a rim with pliers is both inaccurate and difficult, as it tends to distort the plate. Moreover, this method of procedure is so difficult of accomplishment that satisfactory results are more the exception than the rule.

Every plate should have a rim to strengthen it, make a smooth border and afford attachment for rubber, consequently a method of practice which encourages the making of metal plates without a rim because of the difficulty referred to, is open to serious objection. A soldered wire rim on a gold plate affords little attachment for rubber, and as soldering on an aluminum plate is out of question, turning the rim is the only alternative.

After the plate has been swaged in the usual manner, make a counter-die of fusible alloy (Mellotte's Metal). The counter-

die should terminate in a sharp edge at the border of the plate, where it is desired to turn the rim, and the rim turned up against

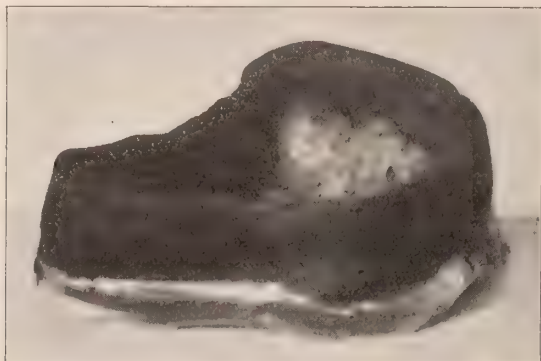


Figure 2.

the edge of the counter-die, which is easily accomplished by the aid of a horn mallet and wooden chaser. (Fig. 1.)

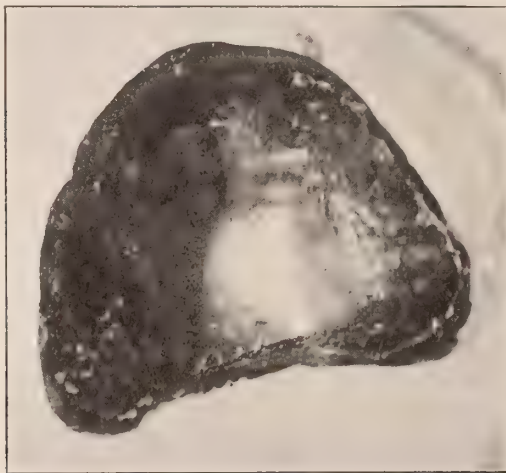


Figure 3.

How to determine exact margin to turn rim. Make a trial plate of base-plate wax and after trying it in the mouth you can readily see where to trim it. Use this trial plate as a guide or

model. Should your finished plate need changing at the border, file edge of counter-die and alter at that point.

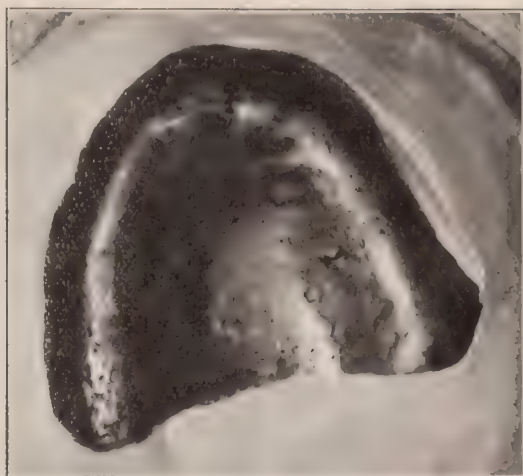


Figure 4.



Figure 5.

The technic of making this counter-die is that of constructing one cut of wax and reproducing same with Melotte's Metal.

Take swaged plate with surplus edge for rim, and wax up primitive counter-die, as in Fig. 2. Take this plate with wax counter-die, place on bench and plaster up sides of same. (Fig. 3.) Melt

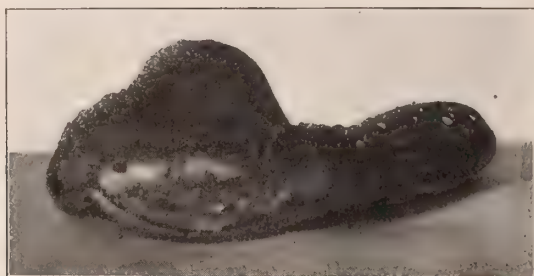


Figure 6.

out the wax with hot water, and pour in Melotte's Metal. (Fig. 4.) Break away plaster and you have counter-die constructed. Take suitable file and trim edge of counter-die. (Fig. 5.)

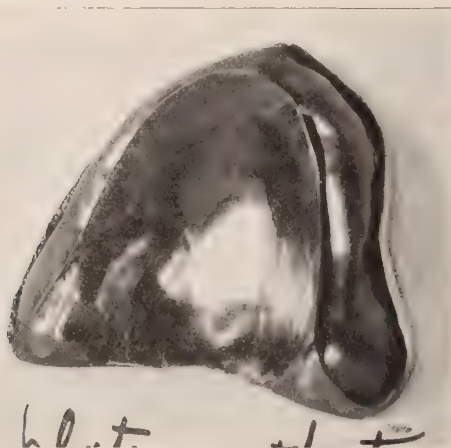


Figure 7.

Gold plate with turned rim and inner swaged rim. An ideal plate.

Place plate on original die with counter-die in place in a vice or hold with clamps, and commence to turn up edge of plate against the counter-die, using horn mallet and wooden chaser. To bring

rim closer to plate, you may find it necessary to file and then the edge of counter-die and reswage the rim closer.



Figure 8.
Aluminum plate showing turned rim.

Take carborundum wheel in engine hand piece and trim the rim to desired width. (Figs. 6 and 7.)

If these instructions are carefully followed I am sure your troubles in turning rims will be small ones.

REPORT OF THE PUBLIC SERVICE COMMISSION*

WM. H. G. LOGAN, CHAIRMAN, CHICAGO, ILLINOIS.

The members of the Public Service Commission of the Illinois State Dental Society met in Chicago on July 11, 1912, for organization and adopted the following plans for the ensuing year:

1. We thought it wise to have the Public Service Commission and the officers of the various component societies undertake the task of having each branch organization hold one or two similar meetings during the year, so that we might as a profession advance along a definite needed line.

2. Each component society that did not have a physician appear before them last year was again urged to invite the officers of their local medical society to furnish them the name of one of their members to appear before the dental society on the date of their first meeting and give a paper on "The influence that diseased con-

*Read before the Illinois State Dental Society

ditions of the mouth, nose and throat have upon the individual's welfare and a consideration of their relation to the community's health.

In the two years that we have been endeavoring to have the members of the medical profession appear before our societies and discuss this question, thirty-four such papers have been presented, however, three of the component societies have not been able to fulfill this request to the knowledge of the commission, although it may have been done.

We have reason to believe that in those localities where physicians have been secured to discuss the relation that septic conditions of the mouth have upon the individual's welfare, dentistry has in that community many very intelligent medical enthusiasts for the cause of oral hygiene.

3. Each component society that had a physician appear before them last year or arranged with the local medical society to have one of its members discuss the relation of chronic infections to general health this year was aided by the commission in sending one of our own members to appear before that society and discuss the etiology, diagnosis and treatment of acute and chronic infections of the oral cavity. Some of the more important conditions covered by the commission's representatives on these occasions were as follows: Septic and putrescent conditions of the dental pulp occurring in deciduous and permanent teeth, Indications and contraindications with outline for amputation of root ends, and treatment and removal of impacted lower third molars.

The post-graduate work which had heretofore been in charge of a single committee was transferred to the commission, as was the furnishing of essayists for the various local societies. The thought behind this move was that if we were to get uniform consideration of a given subject throughout the State, it could only be secured by some committee deciding what should be considered and then have that same body invite men to appear before the local societies and give instruction on this subject.

The demand for uniform immediate instruction of our profession upon the diagnosis and treatment of chronic infections found associated with teeth was confronting us because the best practitioners of medicine having learned the seriousness of oral infections were examining their patients for septic oral foci and

when found were referring them to the dental profession for treatment. If time should prove our profession not competent to give these cases the proper care, we will be placed in a very embarrassing position, for the reason that we have been informing the public for some time that such conditions are injurious to the patient's health; therefore the commission decided that the study course should cover the etiology, pathology, diagnosis and treatment of acute and chronic septic conditions found associated with teeth and the needs and methods to be pursued in the examination of school children's teeth.

4. The commission continued the public meetings along the same line as was instituted last year and that the proper public audiences might be assembled to some degree of certainty, the chairman of the commission received from the local committee in charge the names and addresses of all officers and members of the four following groups residing in the city where the public meeting was to be held: clergymen, officers of women's clubs; county and city superintendent of schools, members of the school board and all school teachers; state senators, representatives and congressmen of the district; and members of the medical profession practicing in the city who were members of the local medical society.

About one week previous to the proposed meeting each individual forming these groups received two letters, the first one coming from the local committee who furnished the commission the names and addresses of these groups. The second was sent by the chairman of the Public Service Commission and a copy of the letter that has been sent by the commission on all of these occasions was similar to the one sent into Peoria during the last few days, and reads as follows:

"The purpose of this letter is to urge your interest in and attendance at a public meeting to be held in the Orpheum Theatre, May 14, 1913, at 3:45 p. m.; where Dr. C. N. Johnson of Chicago, one of the dental world's most brilliant students and teachers will deliver a lecture on 'Teeth and Health.'

"This movement was instituted in and is being carried on throughout the entire State by the Illinois State Dental Society to the end that disease and crime may be reduced and a healthier citizenship developed.

"Very truly yours,
Chairman Public Service Commission."

On February 1, 1913 the commission purchased from the Na-

tional Month Hygiene Association the motion picture film known as the "Toothache" film, for use in its public educational campaign, purchase price \$150. Dr. H. F. Lotz, a member of the commission was made custodian.

The first public exhibition of this film under the direction of the commission was at the Colonial Theater in Joliet during the Will-Grundy Co. meeting, February 20th, 1913. Public lectures and exhibition of our film occurred during the year in the following towns:

Tuscola, Streator, Springfield, Chicago, Joliet, Morris, Kankakee, Quincy, Cairo, East St. Louis, Sterling, Peoria, Belleville, Sheldon, Rockford.

The attendance at the public lectures varied from fifty to nine hundred. At the motion picture film, which covered a number of exhibitions in each town it varied from two hundred and fifty to eight thousand and the town which had the eight thousand people was Peoria.

During the past two years, twenty-one public lectures have been given under the direction of the commission and the film has been shown in fifteen towns. The total attendance at the public lecture was seventeen thousand two hundred and the total number viewing the toothache film was twenty-four thousand making a total of forty-one thousand two hundred people who have had called to their attention the relation that exists between good teeth and health, and this does not include those who read the public newspaper notices and received individual letters sent out by the commission and local committees.

The expense incurred by the commission to bring about this result for the first year was two hundred and eighty-six dollars while this year's expense, which includes the initial cost of the film which was one hundred and fifty dollars, was \$280.97 net total expense.

However, it should be recorded that we received from rentals of the film sixty-three dollars and twenty-one cents and the total expense for transportation and other items here appended was twenty-one dollars and forty-six cents leaving a balance of forty-one dollars and seventy-five cents.

In reference to the results obtained by the film, it is your commission's opinion that the results warrant the purchase of another and placing it in the northern section of the State so that it can be put at the disposal of the Chicago Tuberculosis Institute, and ar-

rangements for same have already been made. The Chicago Tuberculosis Institute is to hold continuous public meetings throughout various sections of the State starting next September, and they are very desirous that our film be a part of their exhibit.

Respectfully Submitted,

G. E. Hawkins,

H. F. Lotz.

F. F. Molt.

J. P. Smith.

Wm. H. G. Logan, chairman.

REPORT OF CLINIC COMMITTEE.*

BY DRS. G. W. DITTMAR AND W. B. TYM.

The following report of the Clinic of the Illinois State Dental Society held in the Peoria Woman's Club, Peoria, Ill., Wednesday and Friday a. m., May 14-16, 1913, is brief; owing to the fact that many of the clinicians, though invited and urged to send the chairman of the Clinic Committee a "write-up" of their clinics, have failed to do so, and the committee because of the many duties incumbent upon it during the progress of the clinic, could not report the nature of the numerous clinics; thus much valuable information is necessarily omitted.

As usual, a number of our members allowed their names to go into the program and did not appear, nor even send an excuse for their absence.

Others, whose intentions were unquestionably good at the time they promised to clinic, were prevented from being present but were kind enough to write, 'phone or telegraph their inability to be present.

The Local Committee on Arrangements which so admirably attended to every detail of their duty, shared with the Clinic Committee the displeasure of some patients who had with much inconvenience presented themselves for the benefit of some clinicians who not present were kindly taken care of by some of the other operators were absent and who also failed to notify us of their intentions not to be present. A few patients who had been assigned to operators at some personal inconvenience, and these operators merit the thanks of the committees as well as of the patients.

*Read before the Illinois State Dental Society.

We will divide this report into five parts:

First, the reports received.

Second, the clinician's name and the titles of the clinics given by those present who did not send in a report.

Third, those who were present fully prepared and anxious to clinic, but who could not be supplied with a patient or other necessity.

Fourth, the names of those who for some good reason could not be present, who notified the committee and were excused.

Fifth, the names of those who were absent and from whom the committee did not receive an excuse.

WEDNESDAY MORNING.

Surgical Clinic—DR. F. B. MOOREHEAD, Chicago.

Patient, a woman 40 years of age, single. Trouble began seven years ago in the form of a small mass in the soft tissues between the superior left cuspid and first bicuspid, labial surface. The mass was removed under local anesthesia, but returned within a year when it was again removed. In all, the mass was removed four times.

At the present time the tumor is about the size of an English walnut and extends from the lateral incisor to the first bicuspid. There is some displacement of the teeth from pressure.

Neoplasms of this class have their origin in the fibrous connective tissue in the gum, the periosteum or periodontal membrane. If one can be certain which tissue forms the mother soil, he can proceed much more intelligently in its removal.

While the tumor under consideration is very properly called a fibroma, it is at the same time, potentially, a sarcoma. Histologically such a mass will give almost the same picture as a giant-cell sarcoma. The larger the cell elements and the greater the quantity of fibrous tissue, the more benign is the neoplasm. The converse is equally true. Malignancy is measured by the scarcity of fibres and the small size of the cells. Every such tumor should be carefully and thoroughly removed.

Under a two per cent solution of novocain in adrenalin chlorid, we made an incision in immune territory, completely encircling the mass, carrying the knife well down to the bone at all points. With a bone chisel the mass, including the periosteum was removed. The lateral incisor, cuspid and first bicuspid teeth were next removed.

The alveolar process was then cut away with large surgical burs, in the engine. The sockets were reamed out to remove whatever membrane might remain. In a word, our object was to remove all gum tissue, periosteum, and periodontal membrane from which the mass may have sprung.

The after treatments consists merely of keeping the parts clean.

Patient was previously shown by Dr. Gilmer in his diagnostic clinic.

SURGERY OF CHRONIC DENTO-ALVEOLAR ABSCESS.

Clinic—DR. J. P. BUCKLEY, Chicago.

Patient was a lady, about 25 years old. Gave a history of abscess of several years' standing, which had been previously treated through the canals of the upper right first bicuspid. The abscess had been opened on the lingual, which opening had closed, and canals of both the bicuspid and cuspid were filled. The X-Ray negative showed a large area involving the lingual plate of bone between the bicuspid and cuspid teeth.

Operation.

With the clinician's own local anesthetic, the area was anesthetized. This was accomplished by using a strong, all-metal hypodermic syringe, injecting first distally to the area involved, then subsequently around the area. An incision was now made between the two teeth affected, about three-eighths of an inch in length, and parallel with the roots. With a periosteotome the soft tissue was loosened on either side of the incision, when the Buckley tissue retractor was adjusted. This held the soft tissue back, controlled the hemorrhage, and exposed the bone to view. The latter was removed by using sharp bone chisels and a metal mallet. We now had the involved area exposed which was thoroughly curetted, washed with physiologic salt solution, and packed with gauze saturated with Euroform Paste. Patient was requested to keep the mouth clean by using an antiseptic mouth wash, and the family dentist was instructed to remove the gauze the following day, thoroughly irrigate the wound; and, owing to the deep lingual involvement, to keep the labial opening patulous for several days, or until the area filled in from the lingual.

"Synthetic Cement Filling"—DR. R. J. CRUISE, Chicago.

Clinic consisted in putting in two fillings in upper central incisors mesial surfaces. The case was not ideal for the use of Syn-

thetic cement as the clinician is of the opinion that the silicate cements should only be used where no great stress is exerted on them. Therefore in the incisors they are most indicated in cases where there is very little lingual extension.

The greatest care in detail is demanded for success in the use of Synthetic cement in order to obtain satisfactory results. Rubber dam should always be adjusted, and every step taken with greatest care. The trouble with the silicate cements is that they are treated as we are used to treat the oxyphosphate of zinc and the fact is that manipulation of them in the manner that will bring success with the latter will bring failure with the former.

The clinician advises those desirous of using the Synthetic cement to obtain the booklet issued by the manufacturers and study it carefully before attempting to use the material, all details of technique will be found therein, and it would take up too much space to go into them in this report.

Cast Base Crowns—DR. E. E. GOULD, Chicago.

Select one with removal pin; the root having been treated and filled, for instance, in any of the six upper anterior teeth, grind down root to gum line with ordinary stone, then ream out root for pin, now take an end stone with pin extending through it a size as large as can be used without touching the gums, cut about one millimeter above gum line, next take an inverted cone stone a size small enough to drop in to depression in root, cut balance of root off with this; next countersink pin hole with cone bur or stone.

Take a straight inlay stone and cut shoulder clear across palatine portion; next crease root canal with wheel bur; lastly stop hemorrhage by placing a large pellet of cotton saturated with adrenalin chloride over root end and placing a ball of unvulcanized rubber over it and forcing it up with stick or instrument, size of root, until hemorrhage has ceased; now select suitable tooth, oil root and crown as in inlay work; soften enough wax to be sure of an excess, put pin through it and press against crown Mesio distally; now warm wax slightly and press to position; trim off excess on labial and if on palatine side there is not sufficient room for sprue, trim off also; chill and remove crown first, then with pliers remove pin; place crown in position on base and melt wax on Mesial or distal side sufficient to insert sprue; cast and finish.

Painless Preparation of Sensitive Cavities Using Novocaine and Adrenalin—DR. G. L. KENNEDY, Villa Grove.

Method consists in making the injection by means of the perineurial method described by Dr. Prinz in the Review of March, 1913, page 212. The injection is made near the point of exit or entrance of the various nerves supplying the teeth to be operated on using a P. D. syringe with a Schimmel needle. If needle is inserted slowly no pain from the injection will result and the pulp will be perfectly anesthetized so that a cavity can be perfectly prepared without pain and no bad after effects.

DR. A. T. OLMSTED, La Salle.

This clinic was designed to show that small gold fillings may be made along the gingival border of labial and buccal surfaces without the rubber dam or the clamp which usually accompanies it.

If the cavities are larger, one would naturally resort to inlaying.

The cavity is best prepared with an inverted cone bur, leaving a flat floor with slight undercut left by the shape of the bur.

Bevel margins with pyramid shaped stone, taking care that the gum is not wounded at any time.

Use cotton rolls to hold back saliva at entrance of salivary ducts and if operating on lower tooth, have attendant ready with saliva ejector in case of emergency.

Touch gum margin with 95 per cent carbolic acid to prevent exudation from gum, dry cavity, and line with a medium setting cement and fill with some form of crystal or mat gold; after the method described by Dr. Corbett, starting with hand pressure, and as soon as the floor is covered, and you have secured anchorage, build gold over gingival border as a matter of safety. Finish with hand or mallet plugger and with crystal gold or foil as you prefer.

Cut down and polish in the usual way.

This is one of the little things that will occasionally help both patient and dentist in every day practice.

DR. H. G. TRENT, Rock Island.

My clinic consisted of a porcelain inlay restoring the disto incisal angle of an upper central incisor. Cavity prepared with retention on lingual surface in form of a step in the gingival third. Brewster porcelain used.

DR. H. H. HAYES, Chicago.

An exhibition of models demonstrating the making of porcelain inlays by the indirect method showing advantage of making inlays from models and the degree of accuracy obtained thereby.

The method of procedure:

Carefully prepare the cavity in such a manner that the impression may be removed, after having been chilled, without pulling or distortion. Any impression material may be used, preferably base plate gutta-percha. The use of a thin matrix is advocated, especially in mesial or distal cavities. The impression is then mounted on a thin dab of plaster to facilitate handling and occasionally to help out a thin margin.

The die is then made of copper amalgam, copper cement or any material of sufficient edge strength.

This die is mounted on a small bed plate accompanying the mechanical swager. After burnishing the platinum matrix with the burnishers and the assistance of a little cotton, it is placed in the swager and compressed. This can be repeated up to the last baking or as long as the operator thinks necessary.

This method obviates the liability of the matrix to become distorted by handling as is very often the case where the matrix is burnished in the cavity. It also widens the scope of the porcelain inlay as many inlays can be made by this method where it would be impossible to burnish a matrix accurately in the mouth.

"Building Up of Broken Down Roots" Using Weston's New Metal—DR. C. W. HILLIER, Chicago.

This metal may be used in building up a root of a molar or bicuspid for crowning that is decayed below the free margin of the gum, which heretofore would be banded and built up with amalgam. You can save time and money by taking a wax impression and casting (and just a word about casting), I never use a blow pipe on this metal, there is enough heat in your investment after burning out the wax to flow your ingot of Weston's, then cast.

In children ten years of age, I have built up the whole crown of a molar with good success. In some cases I use it on anterior crown in place of gold, thus avoiding checking in casting and make a perfect fit at the gingiva.

A repair may be made in fifteen minutes on a vulcanite plate by making an undercut in the rubber, heating the metal in a ladle and pouring, then with a large hot wax spatula burnish down to margins. By using an old vulcanite tooth or facing you can make a temporary crown in a few minutes.

Dental Medicines—DR. ELMORE W. ELLIOT, Chicago.

This clinic consisted of an exhibit of drugs, and an effort was

made to explain why certain drugs were indicated in the treatment of certain diseases. Also why it is necessary many times in therapeutics to combine drugs in order to obtain a remedy possessing the essential properties. The clinic drifted into an interesting quiz on Dental Therapeutics.

Method of Applying Gold Inlay to Porcelain Crown or Plate Tooth—DR. C. E. BELLCHAMBER, Effingham, Illinois.

Shape corner of tooth to form desired, extending cavity to involve incisal corner, using ordinary stones for grinding. Then with a knife edge stone form a groove extending from incisal corner to neck of tooth on the proximal surface. Form wax pattern cast inlay for case in hand. Cement to place and finish work.

Dental Art and Invention Exhibit—DR. S. P. BOWYER, Taylorville.

The Committee on Dental Art and Invention exhibited the articles reported in the committee's report printed elsewhere in the transactions.

The exhibit was given again on Friday.

J. K. CONROY, Belleville.

Various steps for proper amalgam filling. Models showing cavity preparation. Soft cement lining, tooth partly filled showing excess cement removed and lastly finished filling.

G. H. KOPPERL, Jacksonville.

Demonstrating technique in use of De Trey's enamel.

Method of Inserting Sprue with Minimum Amount of Danger of Distorting Wax Form—DR. J. D. McMILLAN, Macomb.

Consisted of a hollow sprue made from regulating tubing, sharpened at both ends and used in connection with a piece of a mechanical saw broken a little longer than the sprue. The saw can be held between the thumb and fingers and heated until red and inserted in wax form without burning the fingers. The wax form can then be removed from cavity and carried with pliers and put in the hollow sprue which is already in place in crucible former. By this method very small wax forms can be handled very easily, which with the larger sprue makes the operation very difficult. Also showed method of warming wax by fitting a large cork, such as we receive in Horlick's malted milk mixing bottles, which fit nicely in the top of an ordinary glass through which two or three common pins may be placed and on the points of which the pieces of wax to be used for

wax forms are fastened, first heating points of pins over alcohol lamp or Bunsen burner, or heating wax before placing on pins, for if this is not done the particles of wax will crack. In this manner the wax can be suspended in the water which should be of a temperature of about 140 degrees; at least, I find the Taggart wax works best at this temperature. Also demonstrated the use of equal parts of glycerine and castor oil as a lubricant before inserting wax in cavity.

Filling Root Canals with the Improved Paraffin Compound Formula, That of Dr. Herman Prinz—DR. F. A. NEWHOFF, Belleville.

The root canal having been thoroughly dried, the following method of filling canals is employed:

Cut a cone from slightly warmed paraffin compound and introduce into canal as far as possible, preferably carrying same high up with suitable root canal plugger.

The cone is then melted in with preferably an electrically heated root dryer, but a broach made of 14 gauge coin silver wire, tapered to enter smallest canals, with a copper bulb soldered or cast on about seven mm. from end which is to be held in the broach holder will give very satisfactory results. This end held in holder to be previously wrapped with a layer of asbestos paper.

The working of this broach in the canal will dispel all air and cause the paraffin to flow in. The proper temperature of this heated broach (the heat having been applied to the copper bulb) may be ascertained by testing it with a small piece of the paraffin on a glass slab. When heat is sufficient to melt the paraffin and cause it to run toward the point it is right, when overheated paraffin runs toward the bulb.

This method is fully described in a paper by Dr. Prinz in the Dental Cosmos of October, 1912, page 1081.

A table clinic on "Faults in the Preparation of Complex Cavities in Posterior Teeth—W. A. ROTH, Seaton.

The clinic was illustrated by means of a series of fifteen models showing defects of cavity preparation and also by a comparison with other models with cavities properly prepared.

Bridge Abutment—DR. P. G. STORDACK, Ottawa.

My clinic consisted of a lower three-tooth bridge (first bicuspid to first molar) made in the following manner: Gold crown on first

molar, sanitary dummy swung in with a clasp metal bar (16g) resting in a slot in a disto-occlusal gold inlay in first bicuspid. This bar is not cemented and allows lateral motion in mastication which always tends to loosen an inlay abutment where same is soldered to bridge.

A Few Conveniences—DR. A. C. WILLMAN, Kankakee.

(1) Using sealing wax to make the use of barbed broaches safe and accurate. The broaches are cut short, about $1\frac{1}{4}$ inches long; sealing wax is put on the ends to form little handles, or finger grips. By this means the most difficult canals can be reached and cleaned. Different colors of wax are used for different sizes of broaches.

(2) Removing inlay models from cavities without distortion. A short piece of german silver wire is wound around a sprue to form a tapering coil. It is then put in a handle and is ready for use. The sprue is placed lightly in the holder, the coils tightening and gripping it firmly. The wire can be bent close to the handle so as to admit of inserting the sprue at any angle. Heat the sprue, insert, chill with water from syringe, slip coil from sprue and remove with the fingers.

(3) Muslin squares 3"x3".

Use instead of napkins to wipe instruments which have cement, wax, guttapercha or deposits on them.

(4) Use of S. S. W. Arkansas Stone No. 13 (mounted) for sharpening fine instruments, burs, etc.

These stones are about one-half inch in diameter and are knife edge. With a jeweler's eye glass these stones can be used to sharpen any fine instruments such as the Smith Prophylaxis files. After using hold against a cuttle fish disk, while running in the engine, to renew the sharp edge. Keep well oiled while using.

(5) Use of S. S. W. Explorer Points No. 18 and 19 for root canal pluggers.

By cutting off the hooks from these explorers which can be secured in cone stocket form very desirable root canal pluggers are obtained. They are bayonet shape, very stiff (will not bend unless first heated to redness) and the No. 18 is very fine.

DR. W. V. B. AMES, Chicago.

Dr. W. V. B. Ames demonstrated the use of water as chilled

in a porous jar (such as a battery porous cup or a flower pot with opening sealed) for controlling the temperature of cement mixing slabs. A flat bottle filled with water and a thermometer inserted through the cork was shown as a mixing slab which, in connection with the porous jar, provides a scheme in which cement may be mixed at a proper temperature, i. e., about 65 degrees Fahrenheit. Evaporation from the surface of the jar keeps the mixing slab in the water inside cool.

FRIDAY MORNING.

DR. E. H. ALLEN, Freeport.

I do not know of a time when I worked under such adverse circumstances. My operation was restoration of the mesio-incisal angle of a superior left central incisor, with gold foil. Caries had made extensive inroads, so that the operation was necessarily long.

First step in the operation was application of dam. Second, removal of frail enamel with chisel and carborundrum points mounted for use in dental engine. These latter are very valuable aids in cavity preparation. Third, removal of caries and cutting the tooth short; very little at the labial aspect, but quite extensively at the lingual aspect. Then with a square end fissure bur, cut a groove across the incisal edge of the tooth at right angle to the gingival margin of the cavity. This groove had a flat base and was slightly enlarged at the distal end to form a lock or anchorage. The gingival margin of the cavity was prepared with flat base, with slight anchorage labially and lingually.

Enamel margins smoothed with fine sand paper discs. The filling was started with Pack's Cylinders No. 1, slightly annealed. Then gold foil No. 4 folded to No. 48 and cut into ribbons, thoroughly annealed, condensed with S. S. W. Co. mechanical mallet No. 3. Right here was where a difficulty was encountered, the operator using, at home, the Bonwill No. 2 mechanical mallet which is controlled entirely differently than the first named mallet. This, with the disadvantages usually encountered at a clinic, contributed in a failure to accomplish the standard of excellence desired by the operator.

Analgesia Under N_2O and air, using his own apparatus—WILLIAM LUXMORE, Chicago.

Case No. 1. Lady, age 30, nervous temperament—cervical cavity in superior left lateral, too sensitive to bear the tooth-brush. A second cavity in a lower molar.

Patient placed in the analgesic stage by proper adjustment of the air vents of his device; she remained in this stage steadily throughout the operation without any further attention on part of clinician. Patient's first experience in analgesia, experiencing no pain or discomfort during operation or after.

Other cases followed.

Restoring An Upper Right First Molar with Amalgum Anchored in the Pulp Chamber—DR. L. R. SNOWDEN, Peoria.

It was one of those cases that a great many dentists extract or crown and experience has shown that they may be made very useful teeth and are much more sanitary than a gold crown. These cases are indicated where the supporting dentine is all gone and the enamel broken down. Trim to a solid foundation, even extending under the gum line. No posts or matrix were used.

DR. ARTHUR E. MATTESON, Chicago.

Demonstrations of the use of *Pyrometric Cones* as comparative tests for fusing *Dental Porcelains*—from that of the highest to the lowest—showing the result of *heat work* rather than *temperature alone*.

DR. A. B. PATTERSON, Joliet:

Showed one of the many uses for the Gillmore attachment, this case showing a saddle for one side only, restoring the upper molars and second bicuspid.

Countersunk in the saddle was a Gillmore clasp engaging a U-shaped bar of 14 gauge round wire, one end of which was securely soldered to two GosLee crowns mounted on cuspid and first bicuspid roots, the other end penetrating the saddle, giving it greater stability, permitting a smaller saddle and avoiding the irritation to the interproximal tissues that results when the saddle is extended to engage the anterior teeth on the lingual surfaces.

Enlarging Root Canals—J. P. LUTHRINGER, Peoria.

The clinician advocated the use of nitrohydrochloric acid, C. P., for enlarging root canals and treating putrescent conditions. A freshly prepared solution of sodium bicarbonate is employed to neutralize the acid at the completion of the treatment.

As details of a procedure are explained with difficulty amid the incident confusion, the clinician had them printed and passed out the slips to the members. Additional copies may be obtained by addressing the clinician.

DR. JAMES W. CORMANY.

Sure stick fit prosthetic consists of making model usual way, then bevel off heel of model, about one-eighth inch and one-fourth inch from heel of model cut groove in model clear across with the point of pen knife; when plate is finished heel of plate turns up against soft palate and the ridge formed by cut with the knife, makes an additional prevention for air to get under the plate.

DR. W. A. HOOVER, Gibson City.

Anchorage for fillings intended as abutments for bridge work: Form with pliers a hollow cone of platinum to approximately fit the enlarged root canal. Place this in the canal and form the wax model over and about it, then insert the heated sprue wire in the cone, making it possible to withdraw the wax model and the post with absolute assurance that they are in proper relation. After casting, we have an inlay with a hollow platinum post re-enforced by cast gold.

Hand Piece Preservation—DR. LE ROY A. KNAPP, Chenoa.

It will be rather difficult to explain this technique in print, a practical demonstration is much more satisfactory. Usually the first thing to give trouble is the failure of the clutch to grip the bur or mandril sufficiently tight to prevent slipping when in use. This difficulty can be overcome in two ways, either by removing the clutch and reversing it, or by adding a washer to the washer pin. I would advise the latter method, however, in order to get the maximum wear out of the hand piece, for after the addition of two or three washers as they are needed, the clutch having become worn again, these added washers may be removed, the clutch reversed and to all intents and purposes you have a new hand piece and can add the two or three washers as they are needed again, making the life of the hand piece twice as long as is usually the case.

Technique to be followed in adding a new washer to washer pin. Unscrew small screw in ferrule, remove ferrule, disconnect cable end-piece from hand piece by bending in proper direction, T-joint will then spring out or can be easily taken out, then remove washer pin with head, place new washer on pin and put washer pin back in place again, and right here is where I found all but one man had been using the wrong technique in replacing the T-joint. The T-joint should be dropped in slot and let hang perpendicularly, cable end-piece put back in place and with thumb pressure the T-part of

T-joint can be forced into its slot, ferrule replaced and clutch will work nicely again.

To reverse clutch an instrument is necessary, but hand pressure is usually all that is required to loosen and remove it. Follow same technique as before, including removal of washer pin, then take an instrument about the size or slightly smaller than hole in end of hand piece, after getting instrument firmly against end of clutch, make enough force on instrument to push clutch out; when reversed and replaced again and hand piece reassembled it is practically as good as new. Another point; when bur or mandril becomes wabby in hand piece, give little screw in base of ferrule two or three turns, or enough to take up wear, this will remedy the wobbling.

A close observance of this technique may often save you valuable time, some money and no doubt more or less loss of temper.

DR. C. B. SAWYER, Jacksonville.

Showed models and skiograph of a boy aged 13 where the left superior incisor had failed to erupt; skiograph showed a supernummary laying diagonally back of central which had prevented eruption. Supernummary extracted under anaesthetic, and central now coming to place.

A Short Accurate Method of Adapting a Porcelain Crown—
DR. A. M. WILKES, Farmer City.

Prepare root as desired, grind crown to approximately fit root, adjust post, mix synthetic porcelain as for filling, cover base of crown with the prepared porcelain, insert post in crown, dry root of tooth, place piece of tin foil over end of root to exclude secretions, place crown in position, holding in place until porcelain is partially set, remove crown and post intact, lay aside for about fifteen minutes until porcelain is thoroughly crystalized, then polish and set with cement.

A New Application of the Bonwill Theory, with Original Anatomical Articulator—DR. W. C. DALBEY, Du Quoin.

Dr. Bonwill took, as his *average*, a measurement of four inches for the base line of his equilateral triangle. The main object was to establish position of central incisors, and while the theory is a good one, it is merely an "average."

The clinic consists of adjusting the new anatomical articulator, not to an average of four inches, but to an equilateral triangle

for each case in hand. The exhibitor contends that this triangle will vary all the way from three and one-half to five inches.

One of the instruments of the clinic was an instrument to measure the living subject. It is an especially devised calipers whose points are enlarged and in shape like ordinary sewing thimbles. The measure is taken just back of and snugly inward from the lobes of the ears. This gives the base line of the equilateral triangle. The measurement is then transferred to the special articulator, whose condyles are separated to correspond with the measure just taken back of the ears upon the necks of the condyles. When the calipers are placed upon the articulator there is a rod projecting downward near the hinge of the calipers upon which rod is a point designating where the incisors are to be placed upon the artificial plates or dentures. This point is equidistant with those of the condyles, forming an equilateral triangle for the individual case in hand.

The articulator is adjustable to the measurements of any case. The condyles are of natural shape and size. They operate within fossæ that correspond also in size and shape to that of the human. The fossæ are adjustable from twenty to sixty degrees, to meet the demands of any case. Upon the sides of the condyles are pins for the use of the snow face-bow, if the operator desires.

DR. L. P. HASKELL:

Dr. Haskell, now in his 88th year and 68th of practice, presented a collection of models, of abnormal and difficult cases, some thirty years old, upon which successful dentures had been made.

He first called attention to a flat and otherwise difficult case, showing that it is not difficult to construct successful dentures upon flat jaws, and without vacuum cavities. Had seen the patient ten years later, who stated he often forgot he was wearing artificial teeth.

Also stating he secured better results on flat jaws with swaged metal plates than with vulcanite.

Called attention to cases with large bony growths in the palate which are easily handled.

Presented the model of an upper jaw where the teeth had, apparently, been extracted but a few months, but had been twenty-seven years. Lack of absorption, owing to hypertrophy of alveolar process. This case required the continuous gum denture, as the

patient showed her gums high on the left side, requiring a very thin, high porcelain gum, secured only by this method.

Showed a large upper jaw, flat and ridgeless, where a continuous gum denture is worn without vacuum cavity, having a long bite, showing that weight is not a factor in case of the upper denture.

Showed a model of Gen'l Sheridan's lower jaw, a difficult case, upon which a partial gold set had been made, for which, a few weeks later he received a complimentary letter, saying he had been trying for twelve years to get something he could wear.

Especial attention was called to several models of flat lower jaws, which he terms the problems of the dentist, for the reason that absorption has taken place to such an extent, the lingual muscles are attached to the margin of the jaw, consequently the plate cannot be worn over the lingual margin as it is lifted by the tongue.

This he demonstrated by placing the end of his finger just over the margin of jaw at the corner of the mouth, holding it tight and raising the tongue, the finger is violently ejected.

To partly remedy this difficulty, flanges are placed on the margin of the gums, extending from first bicuspid about one-quarter inch wide, and between margins of plate and necks of the teeth, upon which the cheeks rest and help hold the plate from slipping.

Always telling the patient these plates are far more liable to irritate the membrane than an upper plate. If it does, they cannot eat, but come to the dentist for relief with plate in the mouth, so the irritated spot can be seen. While it is readily seen, it is not always easy to locate it on the plate. Place a little moist whiting on the spot, put in the plate, upon removing, the spot is indicated by the whiting.

Called attention to many failures, arising from faulty articulation. The six anterior teeth should *never* come in contact under any conditions, the pressure being upon the bicuspid and first molars and exact on both sides.

Exhibited models of excessive protrusion of the lower jaw, where the upper artificial anterior teeth should close, as in nature, inside the lower jaw.

Showed two models of the same jaw taken twenty-five years apart. A continuous gum denture was worn twenty-five years, then a new one was made from new impression.

The first model was kept because of a peculiar bony growth in the palate.

Showed three types of upper jaws. The first, the normal ninety-seven per cent, having the palate hard, requiring the "relief." Three per cent being soft all over the palate, with usually a crevice in the center. The plate to be fitted close to the palate, no vacuum, no "relief." This model had very little ridge; a successful gold denture was made for a campaign speaker.

The third class, that of the bony growths in the palate, the relief making them successful.

The following gentlemen made their clinics but sent in no reports: Drs. Thos. L. Gilmer, Chicago; C. L. Snyder, Freeport; R. L. Hopkins, Sterling; Z. W. Moss, Dixon; F. B. Noyes, Chicago; S. W. Fahrney, Chicago; Ralph T. Huff, Chicago; Horace Tharp, Chicago; H. B. Pinney, Chicago; W. P. Carroll, Streator; F. M. Conkey, Homer; W. E. Holland, Jerseyville; J. E. Hinkins, Chicago; B. J. Cigrand, Batavia; Arthur S. Smith, Peoria; F. E. Roach, Chicago; Goodman A. Miller, Chicago; S. P. Starr, Chicago; Ralph W. Parker, Chicago; A. B. Patterson, Joliet; Frank J. Bernard, Chicago; G. E. Fritz, Peoria; E. C. Hoffman, Plainfield; Hugh A. Vaughn, Decatur; R. C. Willett, Peoria; P. Wiens, Peoria.

The following gentlemen were present and prepared to make their clinics but could not be provided with patients or other necessities: Drs. W. H. G. Logan, Chicago; Wm. E. Harper, Chicago.

The following gentlemen were unable to be present, but sent word and were excused: F. H. Skinner, Chicago; E. A. Crane, Chicago; C. J. Sowle, Rockford; L. L. Funk, Chicago; J. C. Winters, Kankakee; Fred W. Parker, Chicago; H. J. Goslee, Chicago; C. N. Thompson, Chicago; E. M. Fernandez, Chicago; J. W. Ritter, Chicago; R. E. MacBoyle, Chicago; R. S. Graber, Peoria; W. J. Weatherwax, Peoria.

The following gentlemen were absent and sent no word of excuse or explanation: Guy F. Corley, Mattoon; R. C. Findly, Stronghurst; O. P. Mabee, Galesburg; Austin C. Kingsley, Jacksonville; Leon W. Tieman, Belleville; H. A. Potts, Chicago; F. V. Brooking, Macomb; A. D. Kyner, Moweaqua; George Mack, Chicago; D. S. Anderson, Decatur; Thomas Sackie, Pontiac.

PROCEEDINGS OF SOCIETIES.

AMERICAN DENTAL SOCIETY OF EUROPE.

DISCUSSION OF THE PAPER OF DR. CHIAVARO

DR. WILLIAM DUNN, (Florence):

Said he felt very much obliged to Dr. Chiavaro for introducing an instrument which was so neatly and beautifully made. He would like to know whether it was of Italian manufacture or whether it was made out of the country.

DR. W. HIRSCHFELD (Paris):

Said he could not but admire Prof. Chiavaro's all-around skill; he seemed to be at home just as much on the mechanical side of the profession as on the scientific side. So far as the practical use of the instrument was concerned it seemed to him that the principal objection to it was that the end was small enough already, and therefore it did not obstruct the view too much when it was used in the mouth. Otherwise it seemed to him that the instrument could be effectively used and that it ought to find a place in their dental outfit. As the author possessed such an ingenious turn of mind he suggested he should go to work and improve quite a number of dental instruments which needed improvement. A great many things required to be improved in the mechanical part of the profession, and it was impossible for the members to be thankful enough to the author who had set his mind on such work.

PROF. CHIAVARO:

In reply, said the instrument had recently been made in Italy by the firm mentioned in the paper. It was not yet on sale because it was necessary for the commercial part of the question to be settled before the instrument could be put on the market. With regard to Dr. Hirschfeld's remarks, the instrument could be made large or small, according to the use to which it was to be put, and should be tested according to its strength. The point of the instrument was made in such a way that it could go against the back tooth on which it was desired to put strength, and it ought to be useful in the future in that respect. He hoped that some firm would take the instrument up so that the members would be able to obtain it. In the meantime he wished to present to the president the first in-

strument as a token of gratitude for the kindness and courtesy with which he had presided over the meetings.

(The president thanked Prof. Chiavaro for the gift.)

DISCUSSION OF THE PAPER OF DR. PIPERNO.

DR. N. S. JENKINS (Dresden):

Said the paper, apart from its scientific and technical importance showed, as the two previous papers had done, that the field of operation within the mouth was the field pre-eminently of the dental surgeon. As Dr. Aguilar remarked, the destructive methods of operation in the mouth by the general surgeon were sometimes most objectionable. The general surgeon's natural attitude was to remove the disease. Conservation and reconstruction were entirely secondary ideas with him. With the dental surgeon, on the contrary, reconstruction and conservation were as the very breath of his nostrils. Moreover, he had, as Dr. Aguilar mentioned in the case of Dr. Brophy, the extraordinary manual dexterity which was necessary in many of the great, difficult, and complicated operations in order to preserve that which might be preserved. It was only necessary to think what it meant to an unfortunate patient where a certain resection of the jaw was necessary, if a portion of the bone and of the periosteum could be preserved. He could not help thinking that if Dr. Aguilar had himself treated some of the interesting cases, pictures of which had been shown, there would have been far less loss of tissue, and the same was the case in regard to the interesting paper of their friend Chiavaro. His discovery was in the direction of conservation. Its great beauty consisted in the fact that scarlet red was a substance which was slowly absorbed where it was necessary for the reproduction of new tissue, and reconstruction was therefore finally obtained. It was an original idea and was certainly a practical advance. The frequency of fractures of the jaw had largely increased through the use of the automobile, and had immensely stimulated interest in restoring fractured jaws to usefulness. That was a work which altogether belonged to the dental surgeon, and they might hope to see the day when every operation within the interior of the mouth would, by a natural process, come into the hands of the expert dental surgeon, and be entirely removed from the range of general surgery. That was a thing very much to be wished for. The dental surgeon would

then stand in relation to general surgery very much as Cellini stood in art relative to the great Michael Angelo.

DR. A. PIPERNO (Rome) :

In reply, said that Dr. Jenkins was perfectly correct in the remarks he had made about the work of general surgeons. They did not care generally about the future of the teeth; when a fracture occurred they simply thought of the operation from a general surgeon's point of view without taking into consideration the dental part of the subject, and that was the point he desired to emphasize in his paper.

WISCONSIN STATE DENTAL SOCIETY, FORTY-THIRD
ANNUAL MEETING, MADISON, JULY 22-24, 1913.

DISCUSSION OF THE PRESIDENT'S ADDRESS.

DR. E. A. GEILFUSS:

Mr. Chairman, Ladies and Gentlemen of the Wisconsin State Dental Society: I regret exceedingly that Dr. Banzhaf could not make it possible to attend the meeting and to open this discussion on the president's address, because I feel that the address merits thorough and complete discussion, and as I had proposed to devote such time as I had to the discussion of the so-called Taggart-Boynton suit, and the suits evolved from that initial suit, I hope that such as may follow me may take up some of the very important matters that were brought to our attention in this address.

First of all I want to compliment the president upon the masterly way in which he has presented to us the many important matters that have come up in the past year in the dental profession. So far as I was able to note there was missed but one, and that was the fact that within this year, to be accurate, on the 4th of March, 1913, there was signed by President Wilson a bill creating the Naval Dental Reserve Corps, which places upon the same basis as the medical reserve corps of the army and navy, the dental profession. This, I feel, has been one of the most important steps in advance that has ever been taken for our profession.

Gentlemen, the reason I want to call your particular attention to the principles that seem to me to be involved in this Taggart litigation, and the reason why I feel that I am justified in passing over the other points of the president's address, is because

to my mind there has been no more important matter that our profession has had to face in the past twenty-five years, than this litigation. Twenty-five years ago, as you know, we were confronted with the proposition of fighting the International Tooth Crown Company, the assigned owners of the so-called Low and Richmond patents; assigned to the International Tooth Crown Co. and foisted upon the profession in their attempt to collect license fees and royalty. Through the efforts of Dr. J. N. Crouse, of Chicago, as you know, and others, the Dental Protective Association was organized, and successfully fought these patents, proving their invalidity. Dr. Crouse did yeoman's work. He did work for which we all give him great credit, and the men who at that time joined the Dental Protective Association, and by the contribution of their fees made it possible for him to wage this fight, we all who came into the profession later on owe a great debt of gratitude, because we are today benefiting by the fight that was made at this time. Now when the Taggart patents were granted, it seemed to men in the profession, being as they were, patents involving a process, and for that reason adverse to the usual tenets of professional men, that every effort should be made to prove their invalidity. Unfortunately Dr. Crouse did not see fit to test out these patents in the courts, as he had done with the patents which had previously been held and obtained by the International Tooth Crown Co., and with patents such as the Carmichael patent so-called, and others which had subsequently come up, but deemed it wise or expedient to enter into a compromise with the owner of the patent, Dr. Taggart, whereby the members of the Dental Protective Association became licensed upon the payment of \$15 to the use of these patents during their life. Consequent upon Dr. Crouse's refusal to contest them, a suit was started in Washington against Dr. Boynton, whose defense was undertaken by Dr. Finley, and to aid him in attaining the support of the dental profession, the National Dental Protective Association was organized. We all know the outcome of those suits. In the lower court the suit was decided in Dr. Taggart's favor without the judge's having even broken the seals of the briefs that were submitted. His proposition was that he knew that the case would be appealed either way, and that he would let it go up on that basis. It happened that on the 6th day of May of

last year a committee, of which Dr. J. J. Wright, of Milwaukee, Dr. C. W. Hall, of Milwaukee, and myself, were members, went to Chicago to meet with Dr. Crouse, Dr. Buckley and Dr. Johnson, and at their suggestion Dr. Taggart was called in to meet with us. We went over this matter and Dr. Crouse told us then that his great purpose in, as we term it, selling out to Taggart, was to strengthen the Dental Protective Association; that he felt that through this method he had a club whereby he would be enabled to club the profession into joining the ranks of this association. He also stated, without any hesitancy, and without any equivocation, that there was no question in his mind but that the Taggart-Boynton suit would be decided in Dr. Taggart's favor. Now, gentlemen, Dr. Crouse has had a great deal of experience in patent litigation. Certainly neither I nor any of the other members of my committee felt that we could bank against his opinion our own as regards the outcome of this suit. But we felt, at least a majority of that committee felt, that a matter of principle was involved in this issue. We felt that if Dr. Taggart was entitled to his patents he would be sustained by the courts, but that the dental profession owed it to their own self-respect, and to the principles that they had inherited from those that had gone before them, and those that they hoped to pass on to the men that came after them, to fight a process patent as long as it was possible to fight it. We accordingly reported to the Odontological Society, which had sent us to Chicago, that if a man was looking for cheap insurance there was no question about the advisability of his paying his \$15 tribute, or \$25, if he was not already a member of the Dental Protective Association, but that if he felt that he owed anything to his principles, that it was his duty to join the only organization that was fighting that process, to test it out in the courts. Now we all know, and it is a matter of history what the Appellate Court in Washington, the Court of Appeals, finally did decide. Instead of Dr. Crouse's contention being right, that without any question it would be decided in Taggart's favor, quite the reverse was the case. The Court of Appeals of the District of Columbia, three judges sitting, unanimously decided against the validity of these patents. Subsequently, and to be exact, on the second of June another case was started by Taggart in Judge Landis' court. This case, as I am told, was started very nearly a year prior to that time.

The original papers were served, but nothing was done until within two days of the time for which these papers were effective. Dr. Moll did not belong to the Dental Protective Association; he did not belong to the National Protective Association. He was alone. He appealed for help. Many of those to whom that appeal came did not know his standing, did not know but what possibly this was one of these collusion cases, and as I am told he succeeded in getting contributions to the amount of \$16. The trial of that case was to me, who was present during the trial, a farce from beginning to end. In fact a few days after coming back from Chicago I went up to Minneapolis at the request of some of the men with whom I had been in Chicago, and stated to the Minnesota State Dental Society ten days before Judge Landis handed down his decision, that there was no question in my mind or in the minds of those who had attended that trial what the decision would be. That decision sustained Dr. Taggart's patent. The proposition is this: the case was so poorly tried, they were so unprepared in their defense, the attorneys for the defendant were so much at sea that the record, if there is a record—I don't believe that there was an official stenographic report of the case even had—is so poor that there would be no advantage in appealing. For three years members of the National Dental Protective Association had attempted to get the endorsement of the National Dental Association for waging this fight to test the validity of these patents, without success. Men, either through friendship, through sentimental reasons, or other reasons, had lined themselves in Dr. Taggart's behalf in many cases. In other cases they were adverse to getting into the scrimmage, and whatever the cause was, that endorsement was not obtained. I went to the Kansas City meeting a little over a week ago, and we succeeded in bringing this matter to the attention of the House of Delegates of the National Dental Association, and an endorsement of what we asked was unanimously passed. I say unanimously, but after the vote was given out by the secretary, Dr. Arthur Black, the delegate from Illinois, requested permission that he be recorded as not having voted. Now, the resolutions which were adopted by the House of Delegates of the National Dental Association are as follows:

“In view of the fact that the decision in the highest court of the District of Columbia to which the Taggart-Boynton case could be

carried, resulted in as complete a sustaining of the defense as could be done, to the effect that the Taggart patent was invalid, and inasmuch as more recently in Chicago, in a suit embodying the same and three other patent claims, the decision in the lower court upheld the Taggart claims, it seems advisable to get an expression of as representative a body as this as to the justice of the contentions to have the validity of these patents determined by the highest court, therefore,

Be It Resolved, That the House of Delegates of the National Dental Association endorses the action taken by the National Dental Protective Association in their efforts to have determined the validity of these patents."

Those resolutions, gentlemen, were framed and presented with malice towards none. To all the men that I met in Kansas City, and I met them by the hundreds, from all parts of the country, I stated that I had no animosity towards Dr. Crouse, that I had no animosity toward Dr. Taggart; that I was willing to grant that what they had done in the past might have been their best judgment; that I felt that as far as Dr. Crouse was concerned that he had erred in his judgment, and that he had been false to the trust which the dental profession had reposed in him; that if the dental profession were not a body of weak-kneed, boneless, spineless men, they owed it to their self-respect and the respect that they demanded for their profession from people that they came in contact with, to fight as long as they could fight, in other words, until it had been determined by the highest courts whether this patent was a valid patent or whether it was not.

Now, gentlemen, litigation costs money. It costs a great deal of money. I have been told that the defense in the Taggart-Boyn-ton case cost in the neighborhood of \$15,000. The National Dental Protective Association, probably because of the lack of methods in organization, or else because of the supineness of the dental profession was, as regards numbers, not a success. Less than 400 members are on the roll of the National Dental Protective Association. Of that number probably two-thirds are in Wisconsin and Minnesota. We realized that the probabilities were great, that other suits would be started, and we deemed it of the utmost importance that the dental profession of our state should be prepared to properly defend a suit. For that reason the proposition was put to the

trustees of the National Dental Association that in our opinion it would be wise to organize by states; in other words, to organize with probably a national affiliation, but keeping control of our own funds, at least for the time being, until other states had also organized, for our own defense purposes. For that reason we propose to incorporate an association which we propose to call the Wisconsin Dental Protective Association, and we hope, without any too great effort, to attain a membership of at least 500 in this state. Minnesota is going to do likewise. Nebraska and Iowa only wait our lead.

Now, gentlemen, it has happened that much of this work that had to be done, had to be done in a hurry. These suits were brought in Chicago by the beginning of June. The Minnesota State Dental Association met on the 12th, 13th and 14th of June, and they were the only state society which was then in session. For that reason we presented the matter to them. They took steps for the organization of a protective association of which Dr. Kramer is the chairman. We presented this matter to the Milwaukee Odontological Society, got their endorsement and the appointment of a committee and an appropriation of \$50 for preliminary expenses. The same night I went before the Milwaukee County Dental Society, had that committee endorsed, with the addition of three other members, and a further appropriation of \$50 for preliminary expenses of organization, and we have now come before this society to present to you the problem that faces you, to ask that you give it your careful consideration, and further, if the time is proper, I wish to present a resolution or make a motion to the effect.

That the Wisconsin State Dental Society endorses the committee which has been formed to organize the state of Wisconsin for protective purposes, and that it further at this time appropriates \$300 with the proviso that an additional \$200 shall be at their disposal, if necessary, to organize this state for purposes of protection.

Gentlemen, I ask you to bear in mind this is not only the question of protecting ourselves against the patent which we are now facing, but we were told while we were in Chicago, upon good authority, that there were at the present time upwards of twenty other patents now in the hands of lawyers awaiting the outcome of these suits, to be foisted and grafted upon the dental profession.

Now, if we are men let us get up and show that we are. Let us show that we cannot be overridden simply by the say-so of others. I feel confident in my own mind, although that opinion, of course, is open to adverse criticism, that ultimately we are going to win out on this proposition. I know that it happened that I had an interview with Dr. Ottolengui, who is one of Dr. Taggart's strongest endorsers, an interview lasting over four hours, at Dr. Ottolengui's room at the Baltimore Hotel, in Kansas City, in which he told me that he would not for a million dollars take the stand that I and the men on the committee with me are taking in this matter. I told him that I did not agree with him; that I felt that as a matter of principle we were fighting a just cause; a cause which it was proper should be tried out. If Dr. Taggart's patents are valid, the courts will sustain them. If they are not valid we are not prepared to foist them not alone upon ourselves, who have had the opportunity if we saw fit, to sell out our manhood and our self-respect and become licentiates under these patents by the payment of \$15, but we are engrafting it upon our profession for the men who are coming after us. How do we know that Dr. Taggart will not sell the patents in six months, or a year or two or three or four or five years from now? How do we know under what circumstances they will license the men who are coming into the profession after us? Possibly they will put it up to them as they did the Good-year's patents, hold them up for an initial license fee of \$50, and then charge them royalty for vulcanites and plates. Possibly they will hold them up like the International Tooth Crown Co., hold them up for a license fee and then charge them fifteen per cent of their gross charges, too. I maintain that as self-respecting dentists, as professional men, we have not the right to lay down and be overridden. I thank you.

THE DENTAL REVIEW.

Devoted to the Advancement of Dental Science,

PUBLISHED MONTHLY.

EDITOR: C. N. JOHNSON, M. A., L. D. S., D. D. S.

Subscription price \$1.00 a year, including postage, to all parts of the United States, its possessions, Cuba, Canada and Mexico. All other countries \$1.75 a year.

EDITORIAL.

THE DENTAL RELIEF FUND AGAIN.

In our "correspondence" department will be found letters from Drs. James McManus and Edward S. Gaylord calling attention to a new impetus which is to be given the Dental Relief Fund. When this movement was started some time ago by Dr. L. G. Noel we gave it our editorial endorsement, and now we take pleasure in once more calling attention to it, and particularly to the unique method which is to be employed to increase the fund. It always seems to require a "psychological moment" to boom a movement of this kind. Here it is. There never was a more fitting time or opportunity to launch such a scheme than now. Christmas is coming. We all give at Christmas time—at least we all should give. And the idea of the seal, as first suggested by Dr. Ottolengui, fits perfectly into the spirit of the Yule-tide season. A beautiful seal has been designed by Dr. Charles McManus, and with this seal we can do two things: We can largely increase the fund, which is important, and we can show the world at large that we have some altruism in the dental profession, which is almost equally important. Let us wake the committee up Christmas morning with a fund that will warm their hearts the rest of their lives. This committee is composed of good men and true—all trustworthy in every respect—and they should receive our hearty support. Supposing every dentist in the United States should buy two dollars worth of these seals what a difference

it would make to the future prospects of the unfortunate members of our profession who may become incapacitated for work. And think what a heart-glow it would cause to the buyer every time he put one of those two hundred seals on a letter or package. It is purchasing happiness in the cheapest possible way, and it is a happiness which will last on into the years to come. Let every one of our readers—this means you—send to the depots or to the committee for some of these seals the very day this editorial comes out. More than this,—there will be several dentists in the United States, not many we hope, who may fail to see this journal; and to make up for this discrepancy let those who read it order a double number of seals. We want the entire profession represented in this movement and this is the only feasible way we see of doing it. Now remember, your conscience will surely trouble you every moment till you do this thing. If you want to enjoy Christmas buy some Relief Fund seals.

THE EDITOR'S DESK.

A TRIP TO THE SOUTH SEA ISLANDS. ANOTHER VACATION STORY.

(Continued from the November issue.)

WELLINGTON.

We found we were not through with government railroads in New Zealand. We were to go from Rotorua to Wellington, about 400 miles, and we discovered that it would take us from 9:30 one morning till 4:30 P. M. the following day—thirty-one hours! Rapid transit, that! Convinced that traveling on the railroad in New Zealand is not the height of comfort the management very considerably compels the passengers to take a much needed rest on the way to Wellington. Rotorua is the great show spot of New Zealand, and Wellington is the Capital city. Think of the acumen which arranges the schedule so that it is necessary in making this trip to change cars at Frankton and wait from 1:20 P. M. on one day till 12:25 A. M. on the next! There is nothing at Frankton junction to entertain one, but Hamilton a mile or so away is a beautiful town. We strolled up through its attractive streets and I made a call on my

friend Mr. A. L. Yule one of the resident dentists. Mr. Yule dropped his work and engaged a taxi to take us for a run out in the country. The driver instantly spotted us for Americans and warmed to us because of the fact that he was running an American car. And the way he showed that car off was a marvel. He swore by every stroke its engine made and claimed it would do what no other car on earth could ever attempt. I believed it before we got through. He put it up hill on high regardless of the terrific pound of the engine—he didn't mind that! He slammed it around over the road which was very rough, and turned corners with it like a jack-knife half shut up. I offered a silent prayer that he wouldn't dump us in the ditch, and in the same breath I laughed at his antics. We got back alive, had dinner at the hotel, sat around without a fire and nearly froze till 11:30, took a bus to Frankton, and shivered some more till the train came at 12:25. And then something happened.

A day or two before we left Rotorua I had arranged with a representative of the agency through whom I bought all my tickets, to secure our sleeping car accommodations between Frankton and Wellington. He telegraphed headquarters at Auckland and then brought me the receipt for the tickets from the railway department at Rotorua. He couldn't have done more, and I couldn't. When I stepped up to the sleeping car conductor at Frankton and asked for our berths he said in a careless sort of way: "Sorry sir, but we haven't anything." "But," said I, "You must be mistaken. Here is the receipt from the department for the tickets." "Can't help that. We're full up—oh," he remarked in an offhand manner, "We have two uppers for ladies, and one upper for a gentleman." "That will do us no good," I protested. "I can't separate my family and let one of the ladies sit in a day coach alone." He made no answer and was evidently losing all interest in the matter, till suddenly he was awakened to the fact that he had encountered a crowd who were not accustomed to that kind of treatment. First the Mater launched at him with a dissertation on New Zealand railroad management in general and this one in particular, winding up with some reminiscent remark about the delicious prospect of ever getting back again to God's Country where they knew something about running railroads. My Indian Girl pumped the question to him: "Isn't there *anybody* in authority on this line who knows something?" The Collector

sputtered around promiscuously, and as for me, I—I swore. I haven't the most remote idea what I said, but I know I must have sworn or I never would have lived to tell the tale. I would surely have burst wide open from pure choleric effervescence. When the conductor came to, he hustled around for the guard, but of course the guard was helpless and we sat up in a day coach all night.

We were informed afterwards that we were in luck—that no one can sleep in a New Zealand sleeping car who has not previously served his term breaking bronchos which are accustomed to buck. To think that a people as charming as are those of New Zealand have to suffer that kind of transportation is deplorable, and there is little prospect of it ever being any better because the government will never grant a franchise to any private corporation. Never again shall you hear a peep out of me in favor of government railroads. I have been where they grow, and I don't like the crop.

But we soon forgot our troubles when we got to Wellington. Mr. M. E. Denniston, president of the Wellington Branch of the New Zealand Dental Association had telegraphed me at Rotorua stating that the society wished to entertain me on my arrival, and I met a delightful body of men. (How those men kept track of my every movement is beyond my conception. I wouldn't care to commit a crime in Australia or New Zealand and ever hope to escape *incog* if those dentists ever got after me). It was nothing but entertainment during our whole stay in Wellington. I took a letter of introduction to Mr. Knox Gilmer from his cousin my good friend Dr. T. L. Gilmer of Chicago, and immediately the town was mine. Mrs. Gilmer assumed charge of my three girls and had them out motoring before they had time to realize that there still intervened some 8,000 miles between them and home. Mrs. Gilmer is the daughter of the late Prime Minister the Rt. Hon. Richard John Seddon, P. C., who made history for New Zealand, and whose sudden death several years ago was generally mourned throughout the country. She is one of the most charming women in the world, and the only thing lacking in her is that she has not yet been to America—a matter, by the way, which she has promised most faithfully to remedy at an early date.

Mr. Denniston made all sorts of excuses to get out of his office and entertain us, till I felt it incumbent upon me to read him a sermon on diligence in his work—which did no good. In fact all

the men there devoted themselves to us till I was ashamed to accept their hospitality, and began to beg off. A large party of us motored one day to Mr. Denniston's residence at the Hutt—twelve miles out, where Mrs. Denniston entertained us with tea. (By the way this having tea—and cake—every few minutes is a great institution in New Zealand. We never went any where that this delightful entertainment was not pressed upon us. I drank so much tea in Australia and New Zealand that I came away from there tongue-tied, nearly



Wellington City, from Hills.

blind in one eye, and completely tanned inside and out. I have scarcely been able to talk without stuttering ever since.) Then we drove to Mason's Gardens—a botanical garden, not a beer garden—and saw the greatest variety of trees, shrubs, and plants I have ever witnessed in one spot. It was intensely interesting. Next we drove to a noted tea Kiosk on a hill commanding a wonderful view of Wellington, and of course had to have some more tea and some things to eat. How those New Zealanders stand it I do not know—it was eat all the time. I left most of them with indigestion—I know I did, though they never complained.

The dental society gave me a banquet Wednesday night after which I addressed them, and showed them some models. The next night we were invited to dinner and to attend the theater, but I

heard some of the men remark that they regretted they could not have one more evening with me in the discussion of some technical subjects so I was rude enough to ask to be excused from the theater engagement and put in the last evening in Wellington with my professional friends. To my utter astonishment at the close of the meeting I was presented with half a dozen souvenir New Zealand spoons for the Mater and myself, the spoons being a rare article with the famous New Zealand green-stone for handles. By this time I had exhausted all my resources in the way of thanks for favors conferred upon me, and I fear I made a poor attempt at expressing myself, but I can only hope that the men understood. It was my last public speech before starting for home, and when I thought of the many men in Australia and New Zealand who had listened to me under all kinds of conditions and with such infinite patience, I was profoundly affected. I am sure that never in all human experience has a man had more appreciative or more indulgent audiences than I had on this trip, and I wish here to record my heartfelt gratitude.

During my stay in Wellington I had two very great treats. Through the kindness of Mr. Denniston I was shown around the museum, and my family and I had a special invitation to attend a session of parliament. The museum was most interesting, containing as it did so many specimens of ancient and modern Maori handicraft. There were implements of all kinds for the war and the chase, spear heads—shaped differently from those of the native blacks of Australia—fish hooks made of bone, and instruments formed like the adze for carving. The fish lines were equal to any made today, and were all constructed from native hemp. Their robes were made of the same material, and beautifully decorated. The canoes were wonderful in construction, and one of them was quite large, capable of carrying at least twenty or thirty men. The bottom of it was a dugout from a big tree and on top of this was lashed some upper works which made it a rather pretentious vessel.

The government of New Zealand is guarding most sacredly the ancient Maori relics, and it is unlawful to remove any of them from the country. In case a man should become possessed of one and wish to take it away, he must first submit it for inspection and give the government an opportunity to purchase it. If it were not for this the islands would soon be depleted of their treasures.

One very striking thing I saw at the museum was the skeleton of an extinct bird the Moa, one of the very largest birds I imagine that ever lived. It was twelve feet high and built proportionately. It is probably a good thing for the farmers of New Zealand that this bird is extinct, because a single pair of these chaps going through a field of grain would mean havoc to the crop. Speaking about destructive birds reminds me of another species they have in New Zealand which are unique in their viciousness. It is a variety of



The Junction of Customhouse Quay, Willis St. and Lambton Quay, Wellington, New Zealand.

parrot with an exceedingly sharp beak, and a great appetite for tallow. Years ago the farmer was in the careless habit of leaving the slaughtered carcass of a sheep hanging unprotected out of doors to cool. These birds would come along and sample the fat, and they grew ravenously fond of it. The most dainty morsel lay around the kidneys, and they soon learned that it was not very far through the back of a lamb or sheep to the kidney, and so they decided not to wait till the animal was killed for them but to go after it while alive. This has led to a very vicious habit on their part of pouncing on the poor animal and ripping open its back for the fat. The unique cruelty of the practice lies in the fact that the animal does not die immediately but lingers in misery till infection has a chance to step

in and complete the work. We saw one of these birds in captivity in Rotorua, and he doesn't look the part.

Another peculiar bird of New Zealand and one which is becoming almost extinct is the Kiwi. This is a bird somewhat larger than our domestic hen but differently formed. It has no tail but has a very long beak and its legs are set well back. It seems always to be stooped over in front with its head bowed as if looking for food. Its plumage looks more like hair than like feathers, but its chief peculiarity is that it has no wings, and so cannot fly. It may be for this reason that the bird is becoming extinct on account of the difficulty of escaping from enemies, although it is said to run very fast. It lays an egg about twice the size of a hen's egg.

Our evening at parliament was full of interest. The speaker wears the proverbial wig and looks impressive, but the members seemed to indulge in personalities on the floor as if they were not very much impressed. There was a debate in progress over the budget, and I enjoyed it to the utmost. I was told afterward that the proceedings were rather tame that night, but if this was true I should like to be there some time when there was something doing. I should want to be armed though and have a coat of mail, because on this tame evening I heard one member tell another that politically he was worse than a Japanese acrobat, that in fact an acrobat was not a circumstance beside him, that is was impossible to tell whether he was standing on his head or his heels, and that he was constantly flopping. Incidentally he charged him with a whole lot of other things, worse than that. And then the other member got up and practically called the first one a—well I won't say that he exactly called him a liar, because probably the speaker would have waked up if he had used that term—but he flatly told the first speaker that he had misrepresented facts, and then fell back on the parliamentary prerogative of reading documents to prove it. Of course the first speaker immediately jumped to his feet and contradicted the other, and the fur flew back and forth in a very delightful way. It was really interesting—and very edifying. I enjoyed it.

But I came away from that parliament wondering—as I have often wondered after attending our own legislature at home—why it is that men elected to represent the people apparently feel it incumbent upon themselves to waste so much of the people's time.

In the parliament of New Zealand, as is the case everywhere, there is too much posing for effect on the part of the members, too much of the grand stand play. The members on the opposition side seem to imagine that their chief function is to embarrass the party in power, and the party in power naturally spends much time and energy in defending its policy. It is purely playing to the gallery for political effect, and is not conducive to the most economical administration of the affairs of the people. If the members of our legislatures would apply themselves to their duties in a business-like manner—or in other words with the same acumen and directness that is put into many private enterprises—they could attend to the business of the nation in one-half the time they do and at one-half the expense.

But New Zealand is no worse in this respect than other countries, and I should like to pay a tribute to the personnel of the men who sit in their parliament. As a class they impressed me as men of high attainment who had at heart the welfare of the country, and if their methods of conducting its affairs did not in all respects appeal to me it is only another instance where my ideas do not seem to fit into the generally accepted order of things. I am perfectly willing to take them as they are, and to wish them God Speed in directing the destinies of their beautiful country.

We had the pleasure of meeting several members of the present cabinet, and found them without exception men of the highest order of merit. One of them was the Honorable James Allen, M. P., Minister of Finance, and Colonial Secretary. Another was the Honorable R. Heaton Rhodes, M. P., Post Master General, Minister of Telegraphs, Minister in charge of Public Health, Hospitals and Charitable Aid. Then there was Dr. Maui Pomare, the native minister of whom I have already spoken, and to whom in the brief time I had with him I became very much attached. As I have previously said he is a graduate of the College of Physicians and Surgeons of Chicago, and when he learned that I was from Chicago his eyes brightened, his countenance widened and we were chummy in a minute. He enquired about various members of the medical profession in Chicago and entered into their personal and professional characteristics as if reviewing the memories of golden days of the past. "My!" he exclaimed after we had chatted a while "it is like a breath of the old home to meet you and have this visit."

Post Master General Rhodes invited us all up to his private offices in the House to have tea with him during the recess, and we had a most delightful half hour. The Minister of Finance, Mr. Allen, in the course of conversation gave me an opening which enabled me to impress upon him the necessity of government supervision of the condition of the school children's teeth, and I have reason to believe that New Zealand is not to be far behind in this important reform. In New Zealand and Australia it is not so difficult as elsewhere to get the ear of the government in any matter affecting the public weal, and in this respect they set a very excellent example to older and more settled countries.

The day came when we were obliged to say good-by to our friends of Wellington, and start on our long journey home. The Tahiti had arrived from Sydney and was to sail at 5 P. M. for San Francisco, via., Rarotonga and Papeete. At the dock to see us off was a good sized delegation from the dental society, and those who could not come sent notes bidding us *bon voyage*. Our cabins as usual were filled with flowers. Knox Gilmer stepped in lugging a parcel under his arm. He tossed it on the lounge, cut the string, and wrapped one of those wonderful Maori mantles about me. If he had presented me with the mace of parliament I wouldn't have been half so pleased. It was the same kind of mantle that Tutanekai folded around Honiemoa, and I am positive that I was as proud of the mantle as Tutanekai was. Not content with this Mr. Gilmer gave me a *Peu-peu*, which is a native Maori garment fastened around the waist by a band decorated with many-colored feathers, and hanging in colored strips down to the knees. If any of my Chicago friends see me parading along Sheridan Road some fine day decked out in a native Maori costume they can lay it to Knox Gilmer of Wellington.

C. N. J.

(To be continued.)

BOOK REVIEWS.

ELEMENTARY AND DENTAL RADIOGRAPHY. By Howard Riley Raper, D. D. S., Professor of Roentgenology, Operative Technic, Materia Medica and Therapeutics at the Indiana Dental College, Indianapolis, etc., etc. with 354 illustrations. 317 pages. Published by Consolidated Dental Mfg. Co., New York and Claudius Ash Sons & Co. Ltd. London, 1913.

One great virtue of this book is that the author assumes in the elementary part of the work that the reader knows nothing about the subject and thus he deals with it in a simple and direct manner which can be followed by the novice. Usually authors upon such subjects are so familiar with the details that they do not readily put themselves in the place of the reader, and leave too much as taken for granted. In the present volume it is refreshing to read the clear cut explanation of such terms as "volt," "potential," "ampere," etc., terms which we are accustomed to see every day, but the significance of which is really Greek to most of us. The systematic treatment of this part of the subject is alone worth the price of the book. The work of the author in dental radiography is so well known to the profession that it is not necessary to enlarge upon it at this time—except to say that he has gathered into this volume many of the very best examples of X-ray work and has treated the whole subject in a most fascinating and instructive manner. We commend the work most highly.

PATHOLOGY, GENERAL AND SPECIAL. A manual for Students and Practitioners. By John Stenhouse, M. A., B. Sc. (Edin.) M. B. (Tor.), formerly demonstrator of Pathology, University of Toronto, Toronto, Canada. Second edition, revised and enlarged; including selected list of State Board Examination Questions. 12 mo. 278 pages, illustrated. Cloth, \$1.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1913.

This is one of the Epitome Series which has become so popular for quick reference and review work for students, with a list of questions at the end of each chapter and a splendid index for the whole book.

THE ELEMENTS OF BACTERIOLOGICAL TECHNIQUE. By J. W. H. Eyre, M. D., Director of the Bacteriological Department of Guy's Hospital, London. Second Edition, rewritten and enlarged. Octavo of 518 pages, with 219 illustrations. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$3.00 net.

It must be acknowledged that bacteriology cannot be taught by books. The student must have access to the laboratory in order to gain a clear conception of the subject, and yet there is a vast deal which may be learned from books which will simplify and systematize the work in the laboratory. In this book the technique of bacteriology is so clearly outlined that the student may readily follow in the laboratory the various processes described. Illustrations of apparatus and of animals in the various positions and environments are given which will greatly aid the beginner. It is a well written work, clear and concise.

DORLAND'S AMERICAN POCKET MEDICAL DICTIONARY. Edited by W. A. Newman Dorland, M. D., editor "American Illustrated Medical Dictionary." Eighth Edition Revised and Enlarged. 32mo of 677 pages. Philadelphia and London: W. B. Saunders Company, 1913. Flexible leather, gold edges, \$1.00 net; thumb index, \$1.25 net.

This is a most convenient little dictionary brought down to date by the addition of the latest terms in surgery, pathology, medicine, chemistry, serology, dentistry and veterinary medicine. It is well bound and attractive in appearance, and the price is such that no student need go without a dictionary for ready reference.

OUR TEETH—HOW TO TAKE CARE OF THEM. By Victor C. Bell, A. B., D. D. S. Seventh Edition, carefully revised. Published by Parker P. Simmons, New York and London.

POPULAR ESSAYS UPON THE CARE OF THE TEETH AND MOUTH. By the same author and publisher. Tenth Edition.

These books by Dr. Bell have been adopted by the board of education of New York City as text books and supplementary readers in the schools.

The first of these volumes is written in the simplest possible terms as a primer for children, and at the end of each chapter

are questions bearing on what has been advanced in the chapter. Illustrations are used throughout and the entire book is so arranged as to hold the interest of the child to the end. To emphasize the teaching there are in every chapter just before the questions some "Points to remember," and the important things are thus repeated in such a way that the child must surely remember them. The arrangement is most admirable and the book is well calculated to do great good to children just at the most opportune age in their career.

The second volume is more pretentious and is intended for older children or adults. It contains much useful information and is capable of doing great good. It is a hopeful sign when boards of education encourage the dissemination of this kind of knowledge in our public schools, and Dr. Bell is to be congratulated on having his books adopted by the board. In this way they are brought to the attention of thousands of children who otherwise would receive no specific or scientific instruction on this important subject.

"SUCCESS IN DENTAL PRACTICE," by C. N. Johnson, M. A., L. D. S., D. D. S., is the title of a small volume, published by J. B. Lippincott Company, and selling for \$1.25, the second edition of which I am asked to review. In this volume the author has unconsciously described his own office, its arrangement and management; and in so doing he has detailed his professional career, which every dentist, the world over, knows to be truly typical of "Success in Dental Practice."

Just what constitutes success in any walk of life depends upon our own individual viewpoint. Reading between the lines, we see that the author realizes how impossible it is, in a profession made up of widely differing individuals, to formulate any set of rules by which each could be shown the surest and swiftest way to secure success; and yet he forcibly calls attention to certain qualities of *body*, of *mind* and of *character* which have become quite universally looked upon as essential to those who may aspire to struggle into the front ranks of the world's workers.

Chapter I deals with "The Arrangement of an Office," in which is described how the reception room, operating room, consultation room, dressing room and laboratory should be arranged and *kept in order*. The question of *light* in the operating room

receives special attention, and rightfully so, since it relates to the care of the dentists' eyes. The author recommends "a corner room facing the southeast" with two windows, one on the south for sunlight, and the other on the east for operating. It is easy for the reviewer to agree with the author in regard to this location, for, after having an operating room in different parts of a building, I have, for the past six years, much to my satisfaction, enjoyed operating in a room in this favored "southeast corner."

Chapter II deals with "Winning Patronage." Here the author gives us some of his best thoughts. First—"Advertising" is considered, and the fallacy of winning patronage in any other way than along the most ethical lines is clearly shown, though the question of advertising is discussed aside from the purely ethical phase. In this chapter the author shows the advantages to be obtained by the possession of the social graces, and strongly intimates that most, if not all of them, are capable of cultivation.

It seems to be true that there are those who, as it were, are born in the sunshine, others in the shadow, and that it is easier for some to unconsciously display the true essentials of success than it is for others; and yet it is also true that there is cheerfulness and light which spell "success," to be found somewhere in life, if we only search for it hopefully and in earnest. Read this chapter and follow the teaching here given, and surely you will be facing the road that leads to ultimate success; for there is a place waiting for every young man who proves himself to be honest, capable and deserving. In this age there is a demand for old fashioned honesty; we need more men and women in dentistry who are capable; and no one should expect to succeed unless he deserves success.

The question of "Location" is considered in Chapter III. Here the author rather favors locating in a smaller town first, with the possible end in view of ultimately changing to a larger city. By this means the young man has a "lesser responsibility and expense," and it also affords an opportunity to "study his capabilities and learn his limitations in practice," as well as giving him a chance to "leave his mistakes behind, and beginning life anew." As a teacher in a Dental College, it would grieve me to have to believe that the young men who go out into practice from our colleges today, are likely to make such mistakes in practice as to make it convenient to move and seek another location. I would be far happier in the

thought that any young man who studiously cultivates the "essentials of success" which the author emphasizes in Chapter II, may locate, and succeed from the start, wherever he will. There is much which might be said in favor of locating in the larger cities. One thing is certain; the time honored "Mrs. Grundy" has very little influence here. The remarks about locating in one's home town are timely; and yet the person equation enters largely into this question.

Chapter IV deals with the best means of "Extending Acquaintance." Here the author speaks of the value of a genial personality, without which the young man is laboring under a handicap. In regard to working the church for professional purposes, the author states, "I would rather cope with an open-handed devil any time than trust for one moment the fawning pretence of a sanctimonious hypocrite."

The management of children and nervous patients, unless properly done, constitutes one of the most unpleasant things a dentist has to do. Chapter V treats on this phase of practice, and the author shows that he certainly knows how to handle, manage and operate for these patients. The difference between the irresponsible and whimsical patient and the really nervous one is clearly shown. Each requires handling in a different manner. In closing this chapter, the intimation is given that to successfully manage the varying classes of patients, the dentist must first be able to manage himself.

Chapter VI on "Records and Bookkeeping" shows the necessity for such, from both the business and professional aspect. Some system of keeping records and accounts should be in vogue in every dental office. The reviewer prefers the loose-leaf system, having three books; one for "Uncompleted Accounts," one for "Completed and Unpaid," and one for "Completed and Paid." The value of recording the work to be done on a suitable slip for the purpose, when the patient first presents, is readily recognized. In a busy practice it is almost impossible to remember from one sitting to another the location of the tooth in the mouth on which work is being done. How embarrassing it is, when the patient takes the chair, to remark about as follows: "Let us see, we were working on this lower left tooth, were we not?" and have the patient reply, "No! it was the upper right molar." A glance at the record or examination slip

will save all of this and stimulate confidence on the part of the patient.

Several places throughout the book the author refers to "cleaning teeth." Every individual should be expected to *clean their own teeth*. The services of the dentist is necessary from time to time to *scale* and *polish* the exposed surfaces of the teeth, and this work is known today as, and should be called, *prophylactic treatments*. Not because it may possibly afford an opportunity for charging a higher fee, but because this, if properly done, is what it really is, as it prevents decay of the teeth, and the loss of their supporting structures. The statement on page 122 for "cleaning teeth" and other services, was rendered December 1, 1902, and at this time prophylaxis had not gained such a foothold on dental practice. The next time "Master George" calls for services of this character I trust his father will pay for a prophylactic treatment.

Chapter VII is a short chapter on "Appointments and Settings." Herein is described the value of appointment cards; notifying patients for examinations and prophylactic treatments (many patients not only prefer, but demand such notices today), and the **length of settings**.

Chapter VIII is not only well written, but it is a much needed one, as it discusses "Giving Credit, Collecting Accounts and Paying Bills." How the dentist lost the "Governor" for a patient, is interesting, for it illustrates the truthfulness of the old sayings, "All is not gold that glitters" and "There are many diamonds in the rough."

"Fees" are considered in Chapter IX. The author states that a "fee should be based on accomplishment more than anything else," and he might also have said that no fee should ever knowingly be exacted that makes it a hardship for the patient to pay. It is true that "to establish in a neighborhood the reputation of being the highest-priced dentist in the place is often a sheet-anchor of strength," provided it can also be said "He is the best dentist in town." The author claims, and rightfully so, that the ideal status of the fee question is to establish and maintain a practice among a class of patients who repose full confidence in your integrity as a man, as well as your ability as a dentist, where the fee is never mentioned.

The author also believes in doing a certain amount of charity

work where it is deserving; but he has the only real conception of extending charity, which is to help others to help themselves.

The value of an office assistant is briefly mentioned in Chapter X. No busy dentist can afford to be without this valuable and necessary adjunct to a dental office.

Chapter XI considers "Economy in Purchase and in Avoiding Waste," and here it is clearly shown that while it is essential to have all necessary instruments and apparatus, it is not necessary to purchase every "outfit" that is offered for sale. In fact, such waste and extravagance often leads to failure.

Chapter XII discusses "Bank Accounts and Investments." It is here that the author says, "A man's professional usefulness does not continue unabated to old age, and unless he saves something in his palmy days he is likely to face want in his declining years. There is no more pathetic spectacle than an old, broken down, penniless dentist, worn out by years of service at the chair or the bench, his patients slipping away one by one, till finally the last loyal patron seems to have abandoned him for a younger man, and he left with nothing but regrets, to face a meager existence eked out by charity. That this has been the lot of many a practitioner who in his day was capable and active is only too apparent, and it should prove an object-lesson for the young men of the hour to so shape their affairs that when the hand begins to lose its cunning and the brain to be less alert they will have something laid away to insure their independence. How doubly sweet it is for an old man to be able to dispense charity in his latter years instead of being obliged to accept it." Young men should heed this lesson. We have had too many of these sad spectacles in the past; let us lessen them in the future. The reviewer is happy to say that he believes the lesson has been learned; for he is of the opinion that more dentists own their own homes today and have a bank account to their credit than ever before.

Chapter XIII is on "Professional Relationship and Citizenship," wherein the author says, "To sum up the factors which enter into the making of a successful dentist, a man should not only develop his professional attainments to the highest of perfection, but he must aim to provide for those dependent upon him by strict adherence to a sound financial policy in the conduct of his affairs, and in addition he must hold true to his obligations to the profession

of his choice and to the commonwealth in which he lives. A dentist who fulfils these requirements to the best of his ability may be considered to have attained all in a material way which his particular lot in life permits of him, and of such a man it can never be truly said that he has lived altogether in vain."

Had the author been superstitious and therefore not desiring to have just "13" chapters in the book, he might have added one on the health value of proper exercise. This has been mentioned incidentally throughout the text, but it is something that the busy dentist too frequently neglects, and is deserving special consideration in a volume of this kind.

The author and publishers deserve credit for the appearance of this book. It should not only be in the library of every dentist, young or old, but it should be read, reread and studied. Young men especially are to be congratulated on the opportunity of possessing such a book.

J. P. B.

Nov. 1, 1913.

CORRESPONDENCE.

LETTER FROM DR. WALKER.

Dr. C. N. Johnson,

Editor DENTAL REVIEW,

810 Masonic Temple, Chicago, Ill.

Dear Dr. Johnson—May I add my experience to that of Homan in the use of the "combination filling?" In restoring the buccal walls of bicuspid with gold castings it was my custom to take in a porcelain face. In many cases I found that in order to get the desired esthetic effect such a large mass of porcelain was required that the stress resistance of the casting was impaired.

The great promise of the synthetic preparation, which has been largely fulfilled in practice, induced me two years ago to substitute it for the porcelain both in these cases and in restorations on incisors, employing the technique described by Homan. The results have been most gratifying and far better than any that could be accomplished with the all porcelain restoration.

Cordially yours,

ALFRED S. WALKER.

THE DENTAL RELIEF FUND.

It was a great surprise, pleasure and regret to learn that at the Kansas City meeting of the National Dental Association, the Research Committee had raised in cash and promises over fifteen thousand dollars (\$15,000), and also to learn UNOFFICIALLY that my name had been added to the Relief Fund Committee. It was a great pleasure that in that wide-awake western city were found alert, liberal and loyal members of a profession of whom Dr. Charles H. Mayo said "It is evident that the next great step in medical progress in the line of preventive medicine should be made by the dentists. Will they do it?" All things considered, dentists and dentistry, in this country, from the opening of the Baltimore Dental College in 1840, have been on the "firing line." That they will do it, the Research Movement most emphatically answers, "Yes, we will."

Regret "for the things I have not done" and the failure to raise money and organize a National Dental Relief Fund. Many years ago appeals for a relief fund appeared in the dental journals. All that read the appeals (and they were few), no doubt felt in sympathy with the writers, and at society meetings the subject was thoughtfully considered, and then dropped.

President Dr. L. G. Noel, of Nashville, Tenn., at the Asheville (N. C.) meeting, 1903, again brought the subject before the profession and again it was dropped. In a paper read before the National Association at Birmingham, Alabama, 1909, an appeal was made and reference made to the good work done by the British Benevolent Association Fund. Suggestions as to one way of securing a fund were kindly received, generally discussed, but no money was offered.

A grand editorial by Dr. Kirk in the "Cosmos," December, 1911, full of information, suggestions and advice, and a warning to be up and doing and not let the movement lie dormant—"and again a dull thud."

Doctor Ottolengui in an editorial in the "Items of Interest," July, 1912, told what could and should be done, and suggested that a seal be designed to be used on letters, papers and packages through the mails, after the Red Cross manner, during the holiday season, and at all times, and on goods from department and other stores

by friends of the profession. And the writer told how easily and quickly a large fund could be gained if only one-tenth of the dentists of the country would give the fee received for ONE HOUR'S extra work in October each year--another drop with a dull thud, and no reverberation.

The Galveston and San Francisco chapters of horrors brought quick and generous aid to the sufferers, and after a liberal distribution of the funds, the local committee of San Francisco turned over \$3,969.75, nearly four thousand dollars, to the treasurer of the National Dental Association as a starter for a relief fund. It was thought then that this action would awaken interest. A National Relief Committee was appointed and they have given time and money out of their own pockets for printing and mailing appeals, and the hearts and pockets of the profession failed to respond.

For twenty years or more we have had occasional magazine articles, society papers, discussions and circular appeals sent out, that benefited only the postoffice department, and disheartened the committee.

The Hartford Dental Society, in September, appointed Drs. James McManus, George O. McLean and B. A. Sears a relief committee and they in consultation with Dr. E. S. Gaylord of New Haven, a member of the National Committee, decided to make a united personal appeal for contributions. Soon after at a meeting of the New Haven Dental Society, Dr. Gaylord made his appeal and the society from its treasury donated fifty (\$50) dollars.

At the meeting of the Hartford Dental Society, October 13th, lucky day, date and year, the committee were fortunate in getting from thirty-one members \$151 cash; and at the meeting next day in Hartford of the Northeastern Dental Society, Drs. Gaylord, McManus, McLean and Sears made winning appeals for the society donated \$500 to the fund and also \$50 to the widow of a Boston dentist.

Surely one may still have an abiding faith in the promise "Ask and you shall receive," when some dentists at the Northeastern meeting held in the little State of Connecticut in three days gained for the Relief Fund seven hundred (\$700) dollars--and a good outlook for more when the State Dental Association meets in April, 1914, to celebrate its fiftieth anniversary.

Hearts and pocket-books are usually responsive to the cheery

generous spirit of the holiday season, and the dentists of the country while making their friends happy ought not to forget a Christmas offering of one dollar to the Relief Benefit Fund. The committee will have on sale in the dental supply houses by December 1st an attractive association seal, to be used during the holiday season on letters, papers and parcel post packages, and by friends in department and other stores. The seal, that will so cheerily convey Christmas and New Year greetings from the profession to all the friends, carries also the hope and prayers for a very large sale, that will help the association to care for the needy, unfortunate and aged members of the dental profession.

JAMES McMANUS, Hartford, Conn.

THE NATIONAL DENTAL ASSOCIATION RELIEF FUND.

November 7, 1913.

C. N. Johnson, D. D. S.,
Editor DENTAL REVIEW,
Chicago, Ill.

Dear Sir—The N. D. A. Relief Fund Committee are entering upon an active campaign this year with the full determination to add not less than ten thousand dollars to the fund. Soon after November 10th we shall place on sale at all the dental depots in America an attractive Christmas seal to be used on the back of letters, parcel post packages or any mail matter. Enclosed please find a duplicate letter which we have sent out to cover five hundred dental dealers, which is self-explanatory. Already we are daily receiving letters from these dealers expressing a desire to aid us in every possible manner, together with their orders for nearly fifty thousand seals which they will use on their own mail matter.

We now ask every dental journal published in this country to call attention, by a short editorial in the December issue, to these seals, where they can be found, and urge the dentists to enter upon the proper spirit of the holiday season by the purchase and use of these seals, thereby adding to our fund, the title of which emphasizes charity.

The N. D. A. is now the largest dental organization in the world; surely we should have a proportionate relief fund; we can, and will, if our members will only rise to a full understanding of

the necessity and value of such fund. Please join hands with us and we will soon have substantial means to aid our suffering members.

After this Christmas seal has run its course we will present another scheme whereby we shall have a continual dropping of small amount per capita into this fund.

We beg you keep your editorial column open to us.

Yours very truly,

L. G. NOEL,

W. T. CHAMBERS,

JAMES McMANUS,

EDWARD S. GAYLORD,

63 Trumbull St., New Haven, Conn., for the Com.
N. D. A. Relief Fund Committee.

LETTER FROM DR. CRUISE.

The Editor The DENTAL REVIEW, Chicago, Ill.

Dear Mr. Editor—I note that in the November number of the DENTAL REVIEW Dr. Carl J. Grove of St. Paul has censured me severely for my criticism of his paper entitled "Warning Against the Indiscriminate Use of Formaldehyde," which paper appeared in the February number of the Cosmos.

His letter is headed with the words "Criticism Without Proof." Even if such were the truth, which it is not, has the doctor forgotten the saying about "People in glass houses?"

Now, here is the situation. After years of deep study and clinical experience, Dr. J. P. Buckley offered to the profession a formula which has proven invaluable in certain conditions of tooth treatment. It has been accepted favorably wherever dentistry is practised, and will remain so until either Dr. Buckley or some one else offers something better. He has received the thanks of the profession, not only for his formula, but also because he has made it easy for us to procure the required drugs, properly compounded; and let me say that any incident of possible remuneration to Dr. Buckley thereby, only becomes a subject of much pleasure to a grateful profession.

Now, along comes Dr. Grove, out of obscurity, with a smattering of chemistry and a long list of handles to his name, a confessed

champion of the demands of our profession for "exact scientific proof to influence its members in forming their opinions."

With what results has he appeared on the scientific horizon?

First he appears as a plagiarist, neglectful of the custom that if we use the published writings of another we should give credit or disclaim originality at the outset.

Then, in his "original articles" he proceeds to condemn in autocratic style, with equally unscientific reasoning, a drug and a method of using it in combination with another, in the treatment of teeth, which, at the hands of every dentist who has used them properly, not indiscriminately, after the fashion of a clumsy, brainless fool, have proven to be invaluable.

Dr. Grove has not dared to accuse himself of failure in the use of the formula he condemns, though we might be led to judge that such was possible, nor has he mentioned the name of a single man known to the profession who has met with failure in its proper use.

As facts carry me beyond the original paper which I criticised before the Illinois State Dental Society in May, I must add that his paper which appears in the October DENTAL REVIEW in which he again condemns formaldehyde and offers a "Practical Scientific Method for the Treatment of Putrescent Pulp" contains absolutely nothing original excepting the uses of calcium hydroxid, which is of no value, and I now understand that in a more recent paper he has acknowledged this fact himself.

O Tempora! O Mores! This is the gentleman who condemns "criticism without proof." This is the gentleman who reminds us that our profession is now "sufficiently scientific to require exact scientific proof to influence its members in forming opinions."

Dr. Buckley's reply to Dr. Grove in the November REVIEW renders it quite out of place for me to go into any further discussion of Dr. Grove's "scientific findings." Anybody who has read this reply of Dr. Buckley's will be convinced that when I criticized Dr. Grove in my report before the Illinois State Dental Society, if my criticism lacked actual proof, it did not lack excellent reason. Far be it from my mind or purpose to discourage Dr. Grove or anybody from the expression of opinions as the result of study or research, but let it be backed up with the spirit of manhood which should surround our honest convictions, and not sullied with the

spirit of cowardice and falsehood, which evades by trick and artifice every effort at a reasonable discussion of disputed subjects.

Let me conclude by saying that as Dr. Grove thinks it would be for the benefit of dentistry, as well as for myself that I offer some proof for my dogmatic condemnation of his efforts, so do I think that it would be most beneficial for dentistry as well as for Dr. Grove himself if he would seek no further name or notice as a scientific man until he has something really worth while to offer.

With best wishes I remain, very truly yours,

ROBERT J. CRUISE.

Chicago, Ill., November 5, 1913.

PRACTICAL HINTS.

Edited by J. E. Schaefer, D. D. S

(This department is for busy readers. We want short articles containing practical hints—the shorter the better. No article must exceed 200 words, unless of exceptional merit. Every dentist has some useful hint that has been of value to him, and if he will only put it in print it may be of equal value to others. That is what this department is for. Due credit will be given for every article sent. Address J. E. Schaefer, 1745 W. Harrison St., Chicago, Ill.)

Useful Hints:—In grinding down a tooth or root, don't try to do it without a stream of water playing on the stone. In ordinary excavating, sharp burs are the main secret of comfort, as dull ones produce friction and heat.—*M. R. Harned, D. D. S., Rockford, Ill.*

The Indications for a Silicate Filling:—First, the proximal cavities of the anterior teeth which do not come to the incisal edge, the labial and cervical cavities of these teeth, in fact all the cavities of the anterior teeth which do not come to the incisal edges; the cervical cavities of the bicuspid and the crown cavities of children's teeth.—*L. E. Custer, D. D. S., Dayton, Ohio.*

A Handy Instrument:—A very useful instrument for prophylactic work is a mandrel having a large blunt head over which a piece of rubber tubing 3-16 of an inch in diameter, (or a size to fit your mandrel), and $\frac{1}{2}$ -inch in length can be stretched. The blunt head should have a square shoulder at its base, to prevent the tubing from being forced further onto the mandrel. The tubing affords an excellent means of carrying the pumice to the tooth sur-

faces. The tubing also conforms very readily to the gum margin without injuring it, removing all particles of debris.—*J. R. W., Chicago, Ill.*

Right Amount of Rubber in Flasks:—If rubber is measured before packing there will be no doubt about results. Warm the flask slowly to heat bearable to the hand; separate, remove wax; measure in water and replace with same amount of rubber adding a trifle for any loss of wax.

Heat flask and absorb any wax; pack; put in clamp and vulcanize in steam, as then the model is always dry and hard. I do not think a model need be wet at any stage.

This does away with opening flask to examine before vulcanizing or having a lot of rubber squeeze out and you will always know just how the plate is coming out.—*H. R. Staley, D. D. S., Westville, Ill.*

Casting Gold Inlays Without Machine:—The method is as follows: When case is ready for casting, make counter die of "Melotte Moldine." Scoop point off of Moldine over sprue hole, little larger than nugget to be melted. Heat flask over bunsen burner to red heat. Place heated flask on soldering block. Take blow pipe in the right hand—melt nugget to boiling point on top of heated flask. Press firmly and quickly with left hand and Moldine, and you will seldom fail to make fine inlay work. Make handle for Moldine by filling a whisky glass with plaster paris,—scoop out concave, making retention at bottom, which makes an ideal holder. Moisten Moldine with glycerine or water, and keep in original can, well covered, to keep soft and pliable.—*H. E. Bliler, D. D. S., Chicago, Ill.*

Setting Up Full Dentures Without Use of Articulator:—This only applies to a case where one denture is being constructed and the teeth are being occluded to the remaining teeth or denture in the opposing jaw. Use rigid base plate and build wax to contour desired. Insert in mouth and test bite. When trial-plate strikes uniformly start arranging teeth. Cut sufficient wax on left of median line to place the two incisors and the cuspid. When arranged properly remove trial-plate and seal teeth with hot wax

being careful not to heat remaining wax or trial-plate. Chill trial-plate; cut sufficient wax away and place trial-plate in mouth; arrange bicuspid to occlude with opposing teeth; remove, seal teeth and chill. Trim wax to allow molars to be placed; arrange molars in mouth and repeat preceding technique. While the teeth are being arranged on the one side the wax of trial-plate is maintaining the proper relation on the opposite side. Having arranged all the teeth on the one side proceed with same technique on the opposite side.—*Geo. P. Brenner, D. D. S., Milwaukee, Wis.*

Crowning the Upper First Bicuspid:—That we must install a better crown on the upper first bicuspid is acknowledged by the profession at large.

Many operators are extracting them and repairing with a "swing in" bridge, or perforating the root by endeavoring to use a single pinned crown, or by using a gold shell, all of which is very bad.

Construct a band and floor the same as for a Richmond on an incisor; fit in one or two pins as the root canals indicate, using clasp wire; remove with small plaster impression, adjust gold parts back into impression if they pull out, invest in the cup around the pins with a very small amount of investing compound; remove from impression, solder pins in floor using No. 20 solder; place back into impression, wax the cup; pour the model; after loosening the gold piece cut superfluous pins off even with floor, grind a "Goslee" tooth into place, use in it a post of clasp wire, threaded, wax and cast with gold.

This bit of technique is easily and quickly done when once mastered and produces a crown for this particular place which is faultless from every point of view or argument.—*C. E. Allen, Chicago, Ill.*

Where Inlays Fail:—There is a danger confronting the inlay method that is greater than the danger confronting the foil filling and is doubtless the cause of many of the failures in inlay work. Often times after a cavity has been carefully prepared for an inlay and is ready for the wax impression, or is thought to be, it may be found by drying the cavity thoroughly that along the gingival enamel margin a whitened area will appear, extending along a short distance in a bucco-lingual direction and may be found on care-

ful examination to be running in a gingival direction. This beginning decay is very easily overlooked in inlay work because the cavity is prepared without the rubber dam, and consequently under moisture, and this decay is not noticeable when moist. In the failures in inlay work that have come under my notice there are those caused by failure of the inlay keeping its place, and those caused by washing of the cement around the margin and subsequent decay at the margins, and those caused by a secondary extension or recurrence of decay.—*E. D. Coolidge, D. D. S., Chicago, Ill.*

Inlay Technique:—In preparing cavities for gold inlays, I do not think it is necessary to use the rubber dam, because we have cotton rolls and we have spunk with which we can dry out the cavity, and we can use a watchmaker's glass and magnifying mirror and examine the cavity in a moment and see whether all the decay is cut out without troubling the patient to place the rubber dam. The proper preparation of the cavity and the making of the wax model that exactly fits the cavity are difficult problems. Sometimes I make the wax model directly from the cavity, and sometimes I make an amalgam die, as the case may be. I have cast gold inlays with the mould hot, and I have cast them with the mould cold. One day I thought why not cast them neither hot nor cold. I tried casting them lukewarm, and was delighted with the way the cast came out of the mould. Now I cast them all lukewarm, neither hot nor cold, that is, the mould itself. I have always learned that when you invest a wax model, the sooner you cast it after your investment is set the better. You should not heat it too hot, but just burn out the wax properly; then when you melt the gold have it to a white heat. You learn by practice and experience. I use the oxyhydrogen blowpipe. When the gold is properly melted there is a right time to press it down into the mould, and you will get such a fit that by using a fine cement you will not need to burnish that inlay, because it will fit, and this is particularly the case if you have pursued all of the steps properly.—*G. D. Sitherwood, D. D. S., Bloomington, Ill.*

Empiricism:—The pharmacologist and clinician, by their diligent research work, and deductions, place therapeutics on a more rational basis of ideal highness. We know by experience and

clinical conclusions, that constant drug stimulation and elimination is indicated, and necessary, due to our Epicurean habits. Just as long as we indulge in excesses, just so long are remedial agents essential to maintain healthy conditions, the excretory organs not being able to throw off all toxic matter. We know *empirically*, that a dosage of saline, followed by a vegetable cathartic, will relieve and restore systemic disturbances, in putrescent and abnormal conditions of the entire body, and the alveolar process (pyorrhoea alveolaris), but we do not know how or why. O. Victor Limerick, M. D., N. Y. City, maintains that we know *empirically* that lemon juice is of incomparable value, in the cure and prevention of scurvy, but we do not know how or why. We know *empirically* that neither citric acid nor its salts afford results comparable with those of lemon juice, but we do not know why. We know *empirically*, that Warburg's Tincture, despite its seemingly irrational composition, gives rise to profuse diaphoresis, but we do not know how or why. We know *empirically* that nitrohydrochloric acid, when applied externally, proves notably beneficial in chronic hepatitis, but we do not know how or why. We *know*, further, that bedside observations frequently controvert laboratory precepts, but we do not know why. Should we *blindly* adhere to a chain of plausible theories by depreciating and rejecting facts, because we do not know why or how ignorant of the *modus operandi*? We must concede that scientific reasoning and correct understanding will tend to clear the atmosphere of mysticism and erroneous conceptions formed on many vital problems.—H. E. Bliler, D. D. S., Chicago, Ill.

MEMORANDA.

[Society notices will be given insertion in this department free of charge. Subsequent insertions will be charged for at the rate of \$2.00 an inch.]

MARQUETTE DENTAL ALUMNI ASSOCIATION.

The Marquette Dental Alumni Association will hold its Eighth Annual Clinic and Dealers' and Manufacturers' Exhibit at the Auditorium, in Milwaukee, on January 22-23, 1914.—E. A. Flancher, D. D. S., Secretary.

HAS TRAVELED 350,000 MILES.

The *Chicago Journal* has estimated that Dr. L. P. Haskell in going back and forth daily between Hinsdale, Ill., where he lives, and Chicago, where he practices, has traveled 350,000 miles. This is equal to about fourteen times around the world, and we think establishes a record so far as dental commuters is concerned. And he is still active and sprightly.

MINNEAPOLIS DISTRICT DENTAL SOCIETY

The Minneapolis District Dental Society will hold its annual meeting in the Masonic Temple, Minneapolis, January 16-17, 1914. From the data now at hand, this meeting promises to be a gathering of many of the best men in the country.—A. A. Zierold, Secretary, 902 Donaldson Building, Minneapolis.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The Wisconsin State Board of Dental Examiners will convene in Milwaukee at the Hotel Maryland, on December 15, 1913, at ten o'clock A. M., for examination of applicants to practise in Wisconsin. High School diploma, application and \$25.00 fee to be filed with the secretary five days prior to above date. Dental diplomas to be presented in advance of examination.—W. T. Hardy, Secretary, 422 Jefferson Street, Milwaukee.

TEXAS STATE BOARD OF DENTAL EXAMINERS.

Next regular meeting of the above board for examination of applicants for certificates entitling them to practice dentistry in Texas will be held in San Antonio, Texas, beginning December 15, 1913, 9 A. M. Meeting will be held in Chamber of Commerce Hall. The fee of \$25.00 should be in the hands of the secretary by December 10. For official application blanks and further information, address C. M. McCauley, Secretary, Abilene, Texas.

DR. TRUMAN W. BROPHY OF CHICAGO HONORED IN FRANCE.

Paris, France, Sept. 5.—Dr. Truman W. Brophy of Chicago has just been decorated by the minister of public instruction for his work in surgery of the mouth and allied parts. He is the originator of a process for operating on harelips, cleft palates and similar deformities by which these defects are entirely removed. His process has been adopted generally by the leading European surgeons, who were formerly skeptical.

"I discovered the process years ago," said Dr. Brophy to the correspondent of the *Daily News* today, "but I could not be entirely confident of its success until children upon whom I operated had become adults. The results, however, have justified my fondest hopes. I am writing a comprehensive textbook on surgery of the mouth and allied parts, for several efforts in Europe to imitate my operations have failed because the operators unfortunately did not exactly understand the process. I now wish to place the results of my experience at the disposal of all my medical and surgical colleagues."

Dr. Brophy leaves here for Dresden to perform several operations and will start on his return to Chicago next week.—*Chicago Daily News*.

THE PANAMA-PACIFIC DENTAL CONGRESS.

The work of organizing the Panama-Pacific Dental Congress is progressing in a most satisfactory manner, and it is confidently expected that by January 1, 1914, twenty months before the opening of the Congress, all the preliminary work of organization will have been accomplished.

A few foreign countries and a few of our states have yet to appoint executive committees to carry on their part of the work of publicity and securing program and memberships. Within the next two weeks invitations will be sent to those who are selected by the Committee on Organization to act as officers of the various sections of the Congress, and in each case an urgent request will be made for a prompt reply, that there may not be experienced in this matter the delay which in some cases has attended the appointment of state and national executive committees.

Three hundred thousand "stickers" bearing the seal of the Congress and the date on which it will convene have been sent to dealers in dental and pharmaceutical preparations throughout the world, all of whom have expressed a willingness to attach them to every package and letter sent to their customers between now and August 30, 1915. Demands are already being made for more "stickers" and probably one hundred thousand more will be distributed. The Congress will in this way be brought to the attention of every dentist in the world, not once, but many times, and no one will be allowed to forget the date on which he should be in San Francisco to participate in what promises to be the world's greatest Dental Congress.

Work is progressing rapidly on the Auditorium, in which the Congress will meet, and it will undoubtedly be housed in one of the largest and most complete buildings ever erected for such a purpose.

The Congress will be in keeping with the Exposition of which it forms a part, and every effort will be made to provide for the comfort and entertainment of every member. That work on the buildings for the Exposition is advancing rapidly may be noted from the fact that the Machinery Hall is now over eighty-five per cent finished. This building is 968 feet long and 368 feet wide. Over 7,500,000 feet of lumber has been used in its construction, and it is the largest frame building in the world.

RECENT PATENTS OF INTEREST TO DENTISTS.

- 1,057,932. Adjustable bracket, E. Chanal, New York, N. Y.
- 1,057,738. Distributing nozzle for blower pipes, J. E. Jennings, Chicago, Ill.
- 1,057,974. Combined teeth separator and mirror, B. L. Miller, Kingston, N. Y.
- 1,058,234. Device for cleaning teeth, H. F. Hamilton, Boston, Mass.
- 1,058,381. Manufacture of artificial tooth crowns, M. J. Murray, New York, N. Y.
- 1,059,329. Blow pipe apparatus, W. C. Buckman, Jersey City, N. Y.
- 1,058,743. Cap crown splitter, E. D. Gilbert, Philadelphia, Pa.
- 1,058,745. Dental pliers, G. W. Grant, Columbus, Ohio.
- 1,059,300. Dental swagging block, F. O. Jaques, Jr., Cranston, R. I.
- 1,059,696. Adjustable beak forceps, J. Aderer, New York, N. Y.
- 1,059,426. Tooth brush, H. Barnes, Cleveland, Ohio
- 1,059,508. Tooth brush, J. A. Watt, New York, N. Y.
- 1,060,409. Blowpipe for welding and cutting metals, H. G. Allen Seattle, Wash.
- 1,060,242. Dental forceps, B. Feldman, Perth Amboy, N. J.
- 1,060,243. Dental forceps, B. Feldman, Perth, Amboy, N. J.
- 1,060,568. Denture support, H. A. Hurd, Des Moines, Iowa.
- 1,061,161. Apparatus for use in administering anesthetics, S. G. Brown, London, England.
- 1,061,244. Fastening pins for artificial teeth, E. Liegey, Paris, France.
- 1,060,962. Tooth brush, D. Wiess, Cleveland, Ohio.
- 1,061,831. Combination comb and tooth brush holder. J. H. Freese, Concordia, Mo.
- 1,061,398. Tooth measuring instrument, S. Newman, New York N. Y.
- 1,061,976. Tooth brush holder, W. S. Breeden, Millville, N. J.
- 1,062,233. Removable bridge for teeth, H. A. Gollobin, Newark, N. J.
- 1,062,480. Tooth brush attachment, N. E. Laroque, Worcester, Mass.
- 1,062,048. Tooth crown, C. J. Spain, Beloit, Kans.
- 1,063,109. Dental instrument, W. W. Bolts, Washington, D. C.
- 1,062,961. Combined tooth brush and prophylactic container, D. C. Funcke, Wiesbaden, Germany.

Copies of above patents may be obtained for fifteen cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

OBITUARY

DR. JOHN GERRING.

DIED: At his home in Chicago, Dr. John Gerring on October 24, 1913, in his thirty-seventh year, of typhoid fever. Dr. Gerring was born in Wyand, Bureau County, Illinois, March 15, 1877. Entered the Chicago College of Dental Surgery in the fall of 1909 and was graduated in June, 1912. He immediately entered the office of the editor of the DENTAL REVIEW, where his close application to practice and his painstaking care gave promise of a splendid future. He was at the point where life seemed the brightest, and where achievement was beginning to bring its richest reward. Just why he should have been taken from our midst at such a time is one of those inscrutable things which no man can fathom. He leaves a wife and one daughter, to whom our sympathies go out in sincerest condolence.

DEATH OF DR. E. I. WOODBURY.

Dr. Woodbury of Council Bluffs, Iowa, one of the pioneer dentists of that part of the country, died at his home on October 14, 1913, in his eighty-fourth year. He was generally respected, not only on account of his high professional attainments but because of his sterling character as a man. He left a family of five children, two of whom are practicing dentists in Council Bluffs, Drs. H. A. and C. E. Woodbury, so well known in the profession. Dr. Woodbury was the first established dentist in western Iowa. He was among the first members of the Iowa State Dental Society and was its president in 1872. He was a charter member of the Missouri Valley Dental Society and one of its first presidents. He was active in society work up to a few years before his death, when advanced age compelled him to give up practice. He was buried at Walnut Hill Cemetery on Thursday, October 16, leaving behind the record of a useful and exemplary life, and mourned by hosts of friends who knew him well and loved him sincerely.

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